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British Museum (Nat. Hist.). Dept. of Zoology

CATALOGUE

OF THE SPECIMENS OF

AMPHIPODOUS CRUSTACEA

IN THE

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OF THE

BRITISH MUSEUM.

5477

BY

CHARLES SPENCE BATE, F.R.S., F.L.S. ETC.

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PREFACE.

Mr. Spence Bate observes,—"In the production of the following Catalogue, I have endeavoured to bring together, in systematic arrangement, all the Amphipoda that are as yet known to science. This, as far as practicable, has been attempted by descriptions and figures taken from specimens in the British Museum; but where specimens have not been procurable, the description by the author, or some reliable describer, of the species has been followed. In order to adhere to a uniform nomenclature of the parts homologically the same, it has been found necessary to use different terms from those adopted by some authors; but this, it is hoped, will add to the clearness of the description without detracting from the meaning of the author. In other cases, where the description was too long to be quoted entire, the sense of the author has been condensed into a description that coincides with the anatomical characters of the Order.

"The arrangement of the species in this Catalogue is the same as the classification proposed in the British Association Report for 1855, and adopted by Professor Westwood and myself in the 'British Sessile-eyed Crustacea.' But observation during the progress of this Catalogue has suggested a more natural arrangement by the absorption of the Orchestidæ as a subfamily into the Gammaridæ, establishing the Phoxides as a distinct family, and placing them between Corophiidæ and Hyperidæ.

"I am indebted to many valued correspondents for specimens and assistance, without which this Catalogue would have been far less complete. My obligations are expressed throughout the Catalogue in

connexion with their occurrence; but I should deem myself wanting in gratitude did I not especially record my sense of the kindness I have received from Professor Milne-Edwards, who not only permitted me the most ample opportunity of examining the typical specimens in the Jardin des Plantes, but also entrusted me with a numerous collection of unexamined Amphipoda for description. My thanks are also due to M. Guérin-Méneville and M. Lucas for permission to examine their private collections of Crustacea; to Mr. Stimpson for a valuable collection of Crustacea from North America and the Japanese Seas; and to Professor Liljeborg and Dr. Bruzelius for copies of their works and valuable information.

"The Council of the College of Surgeons kindly allowed me to borrow from their store any specimen that I desired; and a collection of Arctic specimens was kindly lent to me by Mr. Hancock of Newcastle.

"In the Plates, the original figures taken from the animals are shaded, whilst those taken from other authors are given in outline only."

J. E. GRAY.

British Museum,
Dec. 1862.

Order AMPHIPODA.

The animals that constitute this Order of Crustacea exhibit the characters of the Class perhaps more perfectly typical than can be found in either of the others; for the type of a class or family is more commonly to be distinguished in its centre than at either extremity of its development.

The three divisions of the animal are distinctly marked.

The cephalon, the pereion, and the pleon never encroach upon one another; and the appendages assume a characteristic form in each.

The cephalon is never developed beyond its normal range, and appears to be scarcely larger than a single segment. It is never produced into a carapax.

The pereion has seven segments, all dorsally perfect and severally distinct. To the normal condition there are few exceptions. In the genus *Dulichia* the sixth and seventh segments are fused together; in *Phrosina* the first and second are so incorporated, whilst in *Rhabdosoma* one segment is absent.

The pleon has seven segments (the last rudimentary), severally distinct, and is capable of being doubled beneath the pereion. To this normal condition there are exceptions.

In *Chelura* the three penultimate segments are fused into one; in *Cyrtophium* and *Dulichia* the one preceding the telson is wanting; and in *Caprella* and the allied genera all the segments of the pleon are more or less imperfect or wanting.

The appendages attached to the cephalon are more or less connected with the organs of sense.

The eyes (*a*) are compound and sessile, and lodged between the bases of the two pairs of antennæ. The tissue which covers them is not divided into facets.

In *Ampelisca* the eyes appear like four simple organs rather than compound. In *Westwoodia cæcula* the lenses of the organs are not appreciable. In some genera of the Hyperina the tissue over the organs of sight exhibits traces of being marked out into facets.

The first or upper pair of antennæ (*b*) consist of a peduncle of three articulations, and a terminal multiarticulate filament supplied with auditory cilia. Occasionally there is a second appendage, generally rudimentary, seldom important, but never supplied with auditory cilia: this secondary appendage exhibits its maximum appearance in the *Phoxides*.

The second or lower pair of antennæ (*c*) possess a peduncle of five articulations, and a multiarticulate flagellum. The first two articulations of the peduncle, and sometimes the third, as in *Talitrus*

and its near allies, are closely incorporated; these, except in the genus and its allies already mentioned, bear a stout tooth—the olfactory denticle. The terminal flagellum occasionally has the articulations fused together, and reduced to one or two; but this decrease in number is not connected with decrease of length, and is invariably attended with an increase of strength.

In some genera of the HYPERINA both these pairs of organs possess such a rudimentary character that they are scarcely capable of having their respective parts defined, and sometimes one or both may be absent.

The mandibles (*d*) are placed between protecting labia, one anterior, the other posterior; they consist of a pair of curved triangular blades, furnished with a cutting edge and a grinding tubercle. Each mandible is generally, but not universally, supplied with an articulated appendage.

The first pair of maxillæ (*e*) consist of three or four foliaceous plates, while the second pair (*f*) have but two; they are extremely delicate, and furnished upon their anterior margins with ciliated hairs, some of which are strengthened into spines of different forms. Exceptions to the normal character exist in the HYPERINA.

The maxillipeds (*g*) are the posterior pair of appendages attached to the cephalon; they have the first two articulations foliaceous in their development, the rest not so; they overlap and protect all the preceding appendages of the mouth. In the HYPERINA they only cover the posterior portion of the preceding. M. Milne-Edwards makes this one of the distinctive characters between GAMMARINA and HYPERINA.

The gnathopoda (*h*, *i*) are the appendages of the first two segments of the pereion; they are generally developed upon one type, the second (*i*) being the larger. The propodos (6), and sometimes the carpus (5), is enlarged into a hand, and the dactylos (7) is doubled back upon the posterior edge, which gives them prehensile power; it is seldom that they attain the true cheliform claw, as found in the orders of BRACHYURA and MACROURA. In a few instances they differ in general shape from each other. In *Callisoma* the second pair (*h*) are almost as perfectly cheliform as in the higher orders, while the anterior (*i*) are developed into a brush; and in *Talitrus* and *Lysianassa* one pair are simple, the other subchelate. In *Lembos* and a few others the anterior pair are larger than the posterior. Both pairs are universally directed forwards throughout the Order; their coxæ (1) are squamiform; they are efficient organs for grasping, and are analogous, but not homologous, with the chelæ of the DECAPODA.

The pereiopoda are the five succeeding pairs of appendages; they homologize with the five pairs of legs in DECAPODA. The two anterior (*k*, *l*) are developed upon one type, and assume a form intermediate between the gnathopoda and the posterior pairs of pereiopoda; they are seldom prehensile, generally of equal length, and always directed forwards, and have their coxæ squamiform. The three posterior pairs (*m*, *n*, *o*) resemble each other; they are seldom prehensile, generally unequal in length, have their coxæ squamiform,

but much less developed than the preceding, and their basa (2) squamiform and largely developed; these are always directed backwards. In the ABERRANTIA the coxæ (1) are fused with the segments of the pereion to which they belong. These five pairs are the ambulatory organs of the animal, and efficiently fulfil their design. The branchiæ, consisting of a single saccular vesicle, are pendent from the coxa (1) of each limb, except the first gnathopoda, and sometimes the posterior pereiopoda, in the males. An incubatory pouch is formed by a single foliaceous plate, ciliated at the margins, being given off from the coxæ of the four anterior limbs in the females; in this the ova are deposited, and the young developed, until they have arrived at a period when they differ from the parent in but a limited degree; except in the HYPERINA, where the form of the general contour of the larva differs much from that of the parent.

The pleopoda, six in number, are developed upon two types. The three anterior pairs (*p*, *q*, *r*) are placed within the lateral margins; they consist of a uniarticulate peduncle, and two branches of multiarticulate flexible flagella, bearing a pair of plumose cilia on every articulation. The three succeeding pairs (*s*, *t*, *u*) are placed upon the latero-inferior margins, and consist of a uniarticulate peduncle that supports two branches, inflexible, generally uniarticulate, and styliform, fringed with strong hairs or spines. The posterior vary in form, and are a valuable assistant in the determination of species. In some of the HYPERINA they assume a foliaceous character.

The anterior pleopoda (*p*, *q*, *r*) are the organs by which the animal swims about, which it does both gracefully and actively. The posterior (*s*, *t*, *u*) enable it to dart from place to place with considerable energy: by folding the pleon close beneath the body and suddenly striking it out again, it springs to a considerable distance. This capability is wanting in the ABERRANTIA, where the pleopoda are all either absent or rudimentary.

The telson (*z*) is the rudiment of the last segment of the animal; it is insignificant in its appearance, but a valuable aid in the definition of genera, in consequence of the variety of forms that it undergoes; its typical appearance is that of an acute-angled triangle, the apex being rounded off, or cleft.

The average length of the AMPHIPODA is less than an inch. The largest specimen is about two inches and a half, the smallest about one-tenth of an inch.

To compensate for their minute size, their importance is raised by their number. This increases towards the Arctic regions, where they are appropriated as food by the whales and other animals.

The Order, as here described, is synonymous with the third tribe (AMPHIPODA) of Dana's order of CHORISTOPODA, and embraces the two orders of AMPHIPODA and LÆMODIPODA in Milne-Edwards's arrangement.

The AMPHIPODA naturally separate into two groups,—the one being constant to the normal type of the Order, the other departing in many of its characteristics. We therefore arrange them respectively under the heads of NORMALIA and ABERRANTIA.

Group NORMALIA.

The coxæ of the pereiopoda are squamiformly developed, generally large enough to protect the branchial sacs. The pleon is normally developed. The three anterior pairs of pleopoda consist of ciliated, double-branched, multiarticulate, flexible appendages, which are used in swimming, and originate on the ventral surface. The three posterior pairs of pleopoda consist of stiff, generally double-branched stylets, of which the last pair vary more than the others, and sometimes have the spines developed into hooks. The telson is formed of a single or double, unimportant, minute plate, sometimes furnished with hook-like spines. This group comprises the Order AMPHIPODA, as described by M. Milne-Edwards. It is divided into GAMMARINA and HYPERINA.

Division GAMMARINA.

The upper antennæ consist of a peduncle of three joints and a multiarticulate flagellum, with sometimes a secondary appendage originating at its base. The lower antennæ consist of a peduncle of five joints (of which the first two are more or less fused together and bear the olfactory denticle) and a flagellum. The maxillipeds cover the preceding appendages of the mouth. One or both of the gnathopoda are subchelate. This division is synonymous with M. Edwards's family of CREVETTINES, and that of GAMMARIDEA of Dana. It is subdivided into VAGANTIA and DOMICOLA.

Subdivision VAGANTIA.

The lower antennæ terminate like the superior; the spines upon the posterior pleopoda are never developed into hooks, but generally into fine hairs, except in the SALTATORIA. They construct no home to rest in, but move from place to place, some swimming or crawling in the sea, others hopping along the shore. This subdivision represents M. Edwards's tribe of SAUTEURS. It consists of the two tribes, SALTATORIA and NATATORIA.

Tribe SALTATORIA.

The posterior pair of pleopoda never exceed the preceding in length. The hairs on the entire animal are short and stiff. The mode of progression when out of the water is by leaps. The habits of the animals are terrestrial or subaquatic. This tribe contains but a single family.

Fam. 1. ORCHESTIDÆ.

The upper antennæ are shorter than the lower, and not furnished with a secondary appendage. The mandibles are without an ap-

pendage. The coxæ are largely developed. The three posterior pairs of pleopoda are short and robust, the last unibranched.

1. TALITRUS.

Talitrus, *Latr. Hist. Crust.* vi. p. 229.
Orchestia, *Fr. Müller, Archiv für Naturgeschichte,* 1848.

Upper antennæ not reaching to the extremity of the penultimate articulation of the peduncle of the lower. Lower antennæ having the two basal articulations absorbed in the frontal wall of the head. Mandibles not palpigerous. Maxillipeds not unguiculate. First pair of gnathopoda not subcheliform in either sex; second pair of gnathopoda rudimentary and imperfectly subcheliform in both sexes. Coxæ of the third pair of pereiopoda almost as deep as those of the preceding pereiopoda, and divided into two equal scales. Posterior pleopoda unibranched. Telson single.

The genus *Orchestia* was confounded for a long time with *Talitrus*. They were supposed to form one by Latreille, who founded this genus. They have been placed in the same position by naturalists of more recent celebrity. Müller places the two genera in one, under the name of *Orchestia*. Professor Dana, in his great work on Crustacea, makes *Talitrus* a subgenus of *Orchestia*.

1. Talitrus Locusta. (Plate I. fig. 1.) B.M.

Cancer Locusta, *Linn. Syst. Nat.* ii. 1055, and vol. iii. p. 760, *Turton's Edit.*
Cancer (Gammarus) saltator, *Montagu, Linn. Trans.* ix. t. 4. f. 3.
Talitrus Locusta, *Latr. Hist. Crust.* vi. 229.
Leach, Linn. Trans. xi. 356; *Edinb. Encyc.* art. *Crustaceology.*
Talitrus Locusta, *Desm. Cons.* t. 45. f. 2.
Risso, Faune de l'Europe Méridionale.
Guérin, Expéd. Scient. de Morée, iii. pt. 5. sect. 2. p. 44.
Brébisson, Cat. des Crust. du Calvados, 1815.
White, Hist. Brit. Crust. p. 160; *Cat. Brit. Mus.* 1850.
Gray, Cat. Brit. Mus. 1847.
Gosse, Mar. Zool. vol. i. p. 142.
Spence Bate, Ann. Nat. Hist. Feb. 1857.
Talitrus saltator, *Edw. Ann. Sc. Nat.* xx. 364; *Hist. des Crust.* iii.
Lucas, Expéd. dans l'Algérie.
Talitrus litforalis, *Leach, Edinb. Encyc.* art. *Crust.*

Second pair of feet feeble, terminating in an imperfect subcheliform hand. The dactylos small, and articulating remotely from the extremity of the propodos. The posterior pair of pleopoda very short. Telson rudimentary.

The cephalon is large and well developed. The line demonstrating a union between the antennal and mandibular rings is distinct. The eyes are very large, and appear near the top of the cephalon

the result of the absorption of part of the lower antennæ within the head, thus driving, as it were, the eyes upwards.

The upper antennæ are deficient of the auditory cilia—organs which appear to be peculiarly adapted for the transmission of a vibrating sensation, such as sound, when water instead of air is the medium.

The lower antennæ in the male are considerably longer than in the female; in the former they are often as long as the entire animal, whereas in the latter they reach to about two-thirds. I say often, in reference to the antennæ in the male, since the extreme length of the organs appears to be reached only in the older animals. We often meet with individuals quite as large, in which the antennæ are not so long.

The exposed portion of the lower antennæ consists only of three articulations to the peduncle. The first two, throughout the genus, are absorbed in the head (Pl. I. fig. 1 *c*), and are not visible on a lateral inspection. The olfactory denticle is not present, the organ most probably being altered in form, and perhaps character, to meet the peculiar conditions of its existence, since, unlike most other Amphipoda, the *Talitri* never enter the water.

The mandibles are very powerful, and supplied with a large molar tubercle furnished with rows of minute denticles on the surface. The biting extremity in each mandible is supplied with a double row of denticles, both formed upon one type; the inner row is supported upon a plate that is moveable. Between the apex of the mandible and the molar prominence are a few strong, curved, hairy spines directed towards the œsophagus.

The mandibles are not furnished with an articulated appendage, which suggests the idea that land species may not require certain parts that are necessary to those which frequent water, whilst those parts which are required are more perfected in order to fulfil their proper functions.

The maxillipeds are non-unguiculate—that is, the last articulation is not produced to a point or nail—and furnished with a few hairs. There are short stout teeth upon the apex of the plate or squamiform process of the ischium.

The whole apparatus formed by these gnathic organs is projected,—a circumstance which enables the animal the easier to gather its food from fixed positions, and in this respect differs from those that feed upon materials suspended in water. It is from this peculiar form of the mouth (which in its protrusion much resembles that of the Locust) that, according to Leach, they derive their specific name of *Locusta*.

The first pair of gnathopoda are simple in the genus, and in this species are stronger than the second; or it would be more correct to observe that the second are weaker than the first, and are generally tucked up beneath the pereion, and are probably seldom used.

The coxæ of the four anterior pairs of legs are nearly as deep as the pereion. The fifth is scarcely less deep than the fourth, but is considerably broader, and divided into two equal plates, an anterior and a posterior, the ischium articulating in the intermediate cleft: the

entire leg is shorter than the two posterior, which are subequal. The coxæ of the fifth and sixth are small.

The two antepenultimate pairs of pleopoda are, in form, common to the genus; the posterior is reduced in *T. Locusta* to almost a rudimentary stage, terminating in a solitary branch; in fact, the animal appears, without close inspection, to have but two pairs only. The telson is absent or obsolete. We believe that this must be peculiar to this species.

The alimentary canal debouches in the position of the telson, on either side of which a few spines are situated, fixed upon a calcareous base—the rudiments of the obsolete telson.

The hairs or spines which are appended to the legs and other portions of the body are of a similar form over the whole animal, with the exception of a few on the oral appendages. Although constructed upon the same type in many of this family, yet their exact form is capable of identification in this species. They are short, stout, and strong, terminating in a round, blunt extremity, with a second appendage of similar appearance considerably smaller originating not far from the point. They both assume traces of a spiral character towards the apex.

The microscopic structure of the integument exhibits traces of the original cell-development and the granular arrangement of the salts within the tissue,—besides which there are certain markings, peculiar to the species, of a ⊤-shape; these do not appear to be pores, and have no apparent connexion with any peculiar function.

The last three articulations of the pleon, with their styliform appendages, complete the animal. The pleon lies inflected beneath the pereion, from whence being forcibly expanded, it becomes a powerful lever. By this means the animals can spring to a considerable distance,—a mode of progression of much value to them, since they are inhabitants of dry land.

The *Talitri* dwell upon sandy shores near the level of spring-tide high-water mark, beneath old sea-weed or any rubbish that prevents the too speedy evaporation of moisture. "In the fermenting and half-rotten beds of Algæ (chiefly Laminaria) at or above ordinary high-tide level," writes Mr. Gosse to me, "I used to find the crustacea, at the depth of several inches in these heaps, along with dipterous larvæ, where it was so hot with fermentation that I could scarcely bear my hand in it."

In the absence of such protection they generally burrow beneath the sand to a depth of about three inches, more or less, according to the dryness of the surface. Above their abodes may frequently be observed small round perforations in the sand, which form the entrance to their homes. From these places of concealment they come out to feed under the rejectamenta of the sea, but skip to their holes at the approach of danger. Say also observes of *Orchestia Gryllus*, that "when alarmed it will seize a portion of its food and skip with it towards its hole in the sand."

Col. Montagu noticed that they retire in the coldest weather of winter to a place of hybernation, or rather, perhaps, a position which

protects them from the cold. This hypothesis agrees with my own observation; for during the cold weather of the winter of 1843–44, I endeavoured to find them in Whitsand Bay, Plymouth, and failed, as did also my friend Mr. Barlee, at Exmouth, who noticed their general absence.

The *Talitri* are carnivorous in their feeding, being one of our shore-cleansers, by devouring the animal matter thrown up by the sea. I once noticed a number of these crustacea* congregated together beneath a stone, busy in devouring a common earth-worm, on Loughor Marsh, Glamorganshire.

My friend Mr. Swain told me that, some years since, he was one of a picnic party at Whitsand Bay, near Plymouth, when he observed the shore covered, not by hundreds or thousands, but literally by cart-loads of these crustacea. A lady's handkerchief which was dropped for a few minutes was perceived, upon being recovered, to be perforated by myriads of small holes, the work of these creatures, who moreover preyed upon each other, every weak one being instantly devoured by the rest; and in their turn these became food for birds, which devoured them greedily. The birds are not their only enemies. Mr. White, in his valuable 'Manual of British Crustacea,' states, upon the authority of Mr. Haliday, that they are devoured by *Cillenum laterale*: and Mr. Reading of Plymouth informs me that they also fall a prey to a little beetle (*Broscus cephalotes*) that exists upon the shores.

Their colour, when alive, is a light fawn, often marked with black upon the back, which changes to a bright red when the animal is dead and dried in the air and sun.

Talitrus Locusta is to be met with most probably on all the sandy shores of the temperate zone of western Europe. In our own country we have received them from the Moray Frith, in Scotland, where, the Rev. G. Gordon says, they are to be met with in great abundance. We have noticed them common in the south of England and Wales; and Mr. W. Thomson and Professor Kinahan record them in Ireland; so that perhaps the noticeable fact would be their absence.

In other parts of Europe, Milne-Edwards records them from St. Malo, and says they inhabit the north and west coasts of France. M. Guérin states that he has taken them in the Bay of Laconia in Greece; Risso has found them at Nice; and M. Lucas brought some home from Algiers.

This is one of the most perfect land-species that we have among the Amphipoda, being in its habits purely terrestrial, never having been taken in the water: yet a certain amount of saline moisture appears necessary to lubricate the external covering of the branchial organs; therefore, though living on land, they have, like all crustacea, a purely aquatic character.

They are vulgarly known as Sand-hoppers, from their great leaping powers. In France, according to Edwards, they have con-

* It was some years since. I do not recollect examining the animals closely; they might have been *Orchestiæ*.

ferred upon them the popular name of Sea-fleas (*Puces de mer*). The origin of the generic name *Talitrus* signifies a "fillip."

2. Talitrus brevicornis. (Plate I. *a*. fig. 6.)

Talitrus brevicorne, *Edwards, Hist. des Crust.* t. iii. p. 15.
Talitrus brevicornis, *Dana, U.S. Explor. Exped.* pl. 56. f. 6.

Of this species I have seen no specimen. The figure of the parts which is given is taken from Dana's 'Exploring Expedition of the United States.'

Edwards says that it is very like *Talitrus Locusta*, but that the antennæ are shorter, so much so that they barely extend to the third segment of the pereion. The upper antenna in Dana's figure reaches beyond the extremity of the penultimate articulation of the peduncle of the lower. The female only of this species is known.

Dana likewise considers it a true *Talitrus*, unless it should be the female of *Talorchestia Quoyana*.

It is taken on the coasts of the Bay of Islands, New Zealand (*Edwards*; *Dana*).

3. Talitrus platycheles. (Plate I. *a*. fig. 1.)

Talitrus platycheles, *Guérin, Expéd. Scient. de Morée*, t. iii. pt. 1. sect. 2. p. 44, pl. 27. fig. 4.
Edwards, Hist. des Crust. t. iii. p. 15.

Of this species I have likewise not seen any specimen; but, by the kindness of M. Guérin, I have seen his original drawing, and compared it with the figure in his work, from which the one in our plate is taken.

The great difference, according to the author, between this species and the type of the genus, exists in the somewhat larger proportion of the second gnathopod in relation to the first.

M. Guérin considered this so important a feature that he formed a division in the genus *Talitrus* to receive the new species, and doubted whether he was justified in not making a genus for its reception. He placed the *Talitri* that had the first gnathopod larger than the second in Division A, of which the *Talitrus Locusta* formed the type; those that had the gnathopoda equal, he placed in Division B, of which *T. platycheles* formed the type; and lastly, those that had the second gnathopod larger than the first, he placed in Division C, of which he made *Talitrus Cloquetii* the type; but this last is a true *Orchestia*.

The relative proportion of the second pair of gnathopoda to the first is in itself scarcely enough to warrant its being more than a variety, particularly as, according to M. Edwards's description, the limb bears the impoverished character as in *Locusta*, being "flat, of a membranous consistence, and without spines."

But a more important distinction exists in the absence of the dactylos of the second pair of gnathopoda.

The inferior antennæ also show a distinction, in the last articulation of the peduncle not being longer than the preceding.

There is another point which, from its anomalous character, must not be overlooked, though, if we can believe it possible that so great and cautious an observer as M. Guérin-Méneville could have been mistaken, I should be inclined to think it to be a misconception. M. Guérin has figured the mandible with a very minute appendage. This is a feature that is absent not only from the genus, but from the whole tribe of Saltatoria,—a circumstance that must either remove *T. platycheles* out of the family of *Orchestidæ*, or induce an entire revision of the tribe. Not having had the opportunity of dissecting the animal myself, I prefer, after recording the circumstance, allowing it to remain in the genus to which the author assigned it, rather than risk any alteration.

Hab. Mediterranean; Genoa, and Corsican Sea (*Guérin*). Edwards records it from Greece and Italy.

The specimen is preserved in the collection of M. Guérin-Méneville.

Doubtful species.

Talitrus Nicæensis.

Talitrus Nicæensis, *Risso, Faune de l'Europe Méridionale**.

Supposing this to be a *Talitrus*, there is nothing in Risso's description that is not consistent with its being the female of *Locusta* or of *platycheles*, or a variety of either.

Hab. Neighbourhood of Nice (*Risso*).

2. ORCHESTOIDEA.

Orchestoidea, *Nicolet in Gay's Historia de Chile*, iii.
Spence Bate, Ann. Nat. Hist. 1858.
Megalorchestia, *Brandt, Bulletin Physico-mathémat. de l'Acad. de St. Pétersb.* ix. 311.
Stimpson, Journ. of Boston Soc. of Nat. Hist. vol. vi.
Talitronus, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 202.

This genus differs from *Talitrus*, as exhibited in *T. Locusta*, in having the second pair of gnathopoda developed in the male as large as in the male of the genus *Orchestia*, whereas the female is a true *Talitrus*, and carries the second pair of gnathopoda, in an enfeebled condition, beneath the pereion.

1. Orchestoidea? Novi Zealandiæ. (Plate I. fig. 2.)

Orchestia (Talitrus) Novi Zealandiæ, *Dana, U.S. Explor. Exped.* pl. 56. f. 5.

Female.—Eyes round, small. Superior antennæ reaching to the extremity of the penultimate articulation of the inferior antennæ.

* *T.* corpore glaberrimo, hyalino, vitreo pellucido; oculis purpureo-nigris; antennis, pedibus tarsisque violascentibus.

Inferior antennæ half as long as the animal; the ultimate segment of the peduncle longer than the penultimate. First pair of gnathopoda very long.

This animal can only be provisionally received into this genus, as the description is taken from the figure of a female given by Dana. When the male is known, we shall be able to ascertain its true character. There appears to be no insurmountable barrier to its being a variety only of *Talitrus brevicornis*, from which the description hardly differs in a specific degree.

Hab. Bay of Islands, New Zealand (*Dana*).

2. Orchestoidea scabripes. (Plate I. fig. 3.)

Megalorchestia scabripes, *Stimpson, Journ. of Boston Soc. of Nat. Hist.* vol. vi.

Orchestia (Talitrus) scabripes, *Dana, U.S. Explor. Exped.* p. 860, pl. 57. f. 4.

"*Male*.—Body smooth. Coxæ rather large, fifth hardly shorter than fourth. Eyes large, a little reniform. Inferior antennæ very long, much longer than body, last joint of base more than twice the preceding in length, flagellum longer than the base, twenty- to twenty-two-jointed, the joints long, the setæ shorter than the diameter of the joints. First pair of gnathopoda, third and following pairs of pereiopoda scabrous over the surface with minute spinules, and these legs, excepting first pair of gnathopoda, having also some longer spinules or setæ; first pair of gnathopoda simply unguiculate; the claw quite small, one-third the preceding joint in length; second pair with a very large subtriangular hand, the palm oblique, scabrous, and having an emargination adjoining the base of the dactylos, dactylos long and very much curved; first and second pairs of pereiopoda subequal; three posterior pairs gradually increasing in length; carpus nearly straight. Caudal stylets with numerous setæ, outer branch of first pair naked.

"Length eleven to twelve lines."

Hab. Puget's Sound (*Stimpson*; *Dana*).

3. Orchestoidea Fischerii.

Orchestia Fischerii, *Edw. Ann. des Sc. Nat.* t. ii. sp. 362.
Guérin, Iconograph. Crust. pl. 26. f. 3.
Edw. Hist. des Crust. t. iii. p. 19. pl. 29. f. 4.
Guérin, Exp. Sc. Morée.

Male.—Eyes small and round. Superior antennæ very short, broad at the base. Inferior antennæ about one-third the entire length of the animal; the penultimate articulation of the peduncle very short; the ultimate about three times as long as the preceding.

First pair of gnathopoda long and slender; the second having the propodos in the male developed into a large hand, of which the palm embraces nearly the whole length of one side, and furnished near the middle with a stout protuberance. The fourth pair of pereiopoda are considerably longer than either the preceding or succeeding pairs, and have the basos developed into a monstrous squamiform plate. The three anterior segments of the pleon are each armed dorsally with a pair of teeth posteriorly directed, one upon each side of the median line.

In consequence of the large squamiform processes of the fourth pair of pereiopoda, M. Edwards made a division in the genus *Orchestia* to separate it from the more normal form, where the great development does not take place.

Hab. Bay of Calamati near Petalidi, Morea (*Guérin*).
In the Museum of the Jardin des Plantes.

4. Orchestoidea tuberculata.

Orchestoidea tuberculata, *Nicolet, Gay's Historia de Chile,* iii. pl. 2. f. 4.
Spence Bate, Ann. Nat. Hist. ser. 2. vol. xx. 524, 1857.
Talitrus insculpta, *Dana, U.S. Explor. Exped.* pl. 57. f. 1.
Talitrus ornatus (♀), *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 201.
Talitronus insculptus (♂), *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 202.
Orchestia tuberculata, *Dana, U.S. Explor. Exped.* p. 1595 (addenda).

Male.—Body tuberculate. Inferior antennæ reaching to about two-thirds the length of the animal; the ultimate articulation of the peduncle longer than the penultimate. Second pair of gnathopoda in the male having the propodos largely developed, of a somewhat oval shape, with a deep notch in the centre of the palm. The coxæ of the third pair of pereiopoda are not so deep as the preceding, either in Nicolet's or Dana's figure.

"*Female.*—Segments of cephalon and pereion smooth, slightly sulcate. Coxa and basos of each of the six posterior legs slightly sulcato-areolate. Inferior antennæ hardly half as long as body; joints of the flagellum transverse. Second pair of gnathopoda with a small propodos, which is nearly elliptical; dactylos minute and articulated with the propodos by the dorsal margin, lying longitudinally, hardly reaching to the apex. In other characters like the male."

The segments of the pereion and anterior part of the pleon are studded with tubercles; these tubercles appear to be ranged in rows, generally two on each segment, and are continued down upon the coxæ. In Dana's figure the tubercles appear to have become confluent, and form minute ridges: still the animal is too marked to be mistaken for any other.

Hab. Coast of Chili (*Gay*); Valparaiso (*Dana*).

5. Orchestoidea Pugettensis. (Plate II. fig. 3.)

Orchestia (Talitrus) Pugettensis, *Dana, U.S. Explor. Exped.* p. 859, pl. 57. f. 3.

"*Female.*—Body smooth. Coxæ of moderate size, fifth hardly shorter than fourth. Eyes round. Inferior antennæ not longer than half the body, flagellum hardly as long as base, the joints numerous, transverse, the setules not a semidiameter of joints in length, base partly scabrous; superior pair one-third as long as base of inferior. Anterior feet simply unguiculate, penult joint scabrous; claw short, half as long as preceding joint, hand of second pair narrow subelliptic, dactylos marginal, longitudinal, reaching nearly to apex of hand, third joint sparingly oblong, having a seemingly two-jointed process below, the extremity narrow and subacute. Ten posterior feet (pereiopoda) armed with numerous short setæ in sets, but not scabrous, the setæ hardly as long as breadth of joints; fourth and fifth pairs of pereiopoda subequal; third pair of pereiopoda one-third shorter. Caudal stylets with numerous setules, outer branch of first pair naked.

"Length eight lines."

Hab. Puget's Sound (*Dana*).

6. Orchestoidea Brasiliensis. (Plate II. fig. 4.)

Orchestia (Talitrus) Brasiliensis, *Dana, U.S. Explor. Exped.* p. 757, pl. 57. f. 2.

"*Female.*—Body smooth. Inferior antennæ not half as long as the body; flagellum hardly as long as the base, about sixteen-jointed, joints slightly oblong, setæ few, hardly as long as diameter of joints; superior pair very short, half shorter than base of inferior, flagellum three-jointed. Feet with short setæ, those of fifth (propodos) joint of three posterior pairs not longer than diameter of joint; first pair of gnathopoda longer than second, ending in a curved claw, which is a little shorter than preceding joint: propodos of second pair semiovate, the upper margin straight; minute dactylos ending remote from apex, longitudinal in position, meros half shorter than fourth carpus, rectangulate below; third pair of pereiopoda half shorter than the fourth, fourth and fifth pairs of pereiopoda subequal, sixth joint quite narrow, the setules of upper and under margins about equal, and in six or seven sets.

"*Male.*—First pair of gnathopoda as in female; second with a large propodos, which is subovate, the palm ending in a low angle,

and not concave, nor emarginate, not toothed, but set with spinules; finger long, carpus very transverse, third joint rectangular, a little oblong, naked.

"Length six lines.

"*Hab.* Rio Janeiro; dredged in the harbour." (*Dana.*)

7. Orchestoidea Californiana.

Megalorchestia Californiana, *Brandt, Bulletin Physico-Mathématique de l'Acad. de St. Pétersbourg,* ix. 311.
Stimpson, Journ. Bost. Soc. Nat. Hist. vol. vi.

I have not seen either the animal or Brandt's description; I therefore give the following from Mr. Stimpson's memoir "On the Crustacea and Echinodermata of the Pacific Shores of America," published in the 'Journal of the Boston Society of Natural History,' vol. vi.:—

"This differs from *O. scabripes*, among other characters, in the great length of the fifth epimeral" (coxa of the third pereiopod), "and in having the outer branch of the first pair of caudal stylets equally spinulose with the inner one. The feet are not scabrous, while the antennæ are so on a considerable portion of their surface."

"*Hab.* Bogeda (*Wonessenski*); Monterey (*Taylor*)."

3. TALORCHESTIA, *Dana.*

This genus differs from *Talitrus* in having the first pair of gnathopoda subcheliform in the male, as in *Orchestia*, and the second developed largely, as in the male of *Orchestoidea* and *Orchestia*, whereas in the female the first gnathopoda are simple, as in *Talitrus*, and the second feeble and unimportant, as in the normal *Talitri*.

This genus was founded by Dana for certain species that Fr. Müller first discovered, the males of which were true *Orchestiæ*, whereas the females were perfect *Talitri*. This circumstance Prof. Dana having corroborated, induced him to divide the group which Müller had united into the genus *Orchestia*, into three equal subgenera, viz. *Talitrus*, *Talorchestia*, and *Orchestia*,—the first being true *Talitri*; the second were *Talitri* in the males, and *Orchestiæ* in the females; and the third were true *Orchestiæ*. This arrangement was followed by myself in the Synopsis of the British Edriophthalmia; but I have thought, since I found that Nicolet, Brandt, and Stimpson had divided the genus *Talitrus* into two genera, viz. *Talitrus* and *Orchestoidea*, that the arrangement now given is more in accordance with nature than the adoption of subgeneric groups, which I am inclined to think should be as much as possible avoided in classification.

1. Talorchestia gracilis. (Plate II. fig. 5.)

Orchestia (Talorchestia) gracilis, *Dana, U.S. Explor. Exped.* p. 861, pl. 57. f. 5.

Talitrus gracilis, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 201 (female).

"*Female*.—Coxæ large; the fifth pair hardly shorter than fourth. Inferior antennæ much longer than half the body, setæ very short (half shorter than diameter of antenna); flagellum much longer than base, joints a little oblong. Superior antennæ about one-third as long as base of inferior. Anterior pair of gnathopoda rather stout, with quite a small claw, and the ischium, meros, carpus, and propodos subequal. Second pair shorter than first, carpus prominent behind; propodos lamellar, rounded at apex, nearly naked, concave on anterior side, and having on this margin towards apex a minute dactylos. First pair of pereiopoda much longer than second; last three pairs gradually increase in length, rather slender, basos of each narrow-elliptic, and edged with minute spinules, other joints with very short setæ at small intervals on the opposite sides; posterior pair of pereiopoda considerably longer than fourth, very much longer than those of third; the setules of the propodos numerous, and not one-third as long on either margin as the diameter of the joint.

"*Male*.—Inferior antennæ longer than the body; flagellum a little longer than the base, about thirty-jointed. First pair of gnathopoda with a small, narrow propodos, the dactylos minute, and acting against the truncate apical margin, and hardly longer than this margin. Feet of second pair having a large ovate hand; lower margin convex, entire, and spinulose; finger a little shorter than hand. Carpus minute; third joint slightly oblong.

"Length about half an inch.

"*Hab*. Sandy shores of a small coral island in the Balabac Passage." (*Dana*.)

2. Talorchestia? Africana, n. s. (Plate II. fig. 6.) B.M.

Female.—Eyes small. Superior antennæ as long as the peduncle of the inferior. Inferior antennæ nearly half as long as the animal. First pair of gnathopoda short. Second pair of gnathopoda long and slender; propodos cylindrical, and terminating in a round extremity, on the side of which the dactylos articulates rather remotely; the carpus is longer than the propodos, and furnished with a tubercle at the extremity furthest from the animal. The coxæ of the third pair of pereiopoda very broad, embracing the width of nearly three segments of the body, and as deep as the preceding.

Length $\frac{11}{20}$ths of an inch.

There is only a female in the Collection of the British Museum; but the great length of the superior antennæ have induced me to place it in this genus rather than in *Talitrus*. It may be the female of the *Orchestia* that Krauss supposed to be *O. Bottæ*.

Hab. Port Natal (*Gueinzius*).

3. Talorchestia Quoyana. (Plate II. fig. 7.) B.M.

Orchestia Quoyana, *Edwards, Ann. des Sc. Nat.* t. xx. p. 362; *Règne Anim.* pl. 59; *Hist. des Crust.* t. iii. p. 19.
Guérin, Icon. Crust. pl. 26. f. 3.
Talorchestia Quoyana, *Dana, U.S. Explor. Exped.* p. 846.

Upper antennæ reaching beyond the extremity of the penultimate articulation of the peduncle of the inferior antennæ, which is about half the length of the ultimate. Lower antennæ about half the length of the animal, and the flagellum about half the length of the antennæ. First pair of gnathopoda in the male having the propodos much shorter than the carpus; the palm is nearly at right angles with the length of the propodos; the limb is covered with many short hairs. Second pair of gnathopoda in the male having the propodos developed into a broad stout hand, the palm of which is furnished with two large teeth, stout and pointed.

Length $\frac{12}{20}$ths of an inch.

In Dana's figure the teeth on the palm are given longer and slighter than in the specimens in the Paris and British Museums. One tooth is not far from the joint of the dactylos, the other antagonizes with the extremity of the dactylos. The female is not known.

Hab. New Zealand. "Bay of Islands, New Zealand" (*Dana*).

4. Talorchestia pollicifera.

Orchestia pollicifera, *Stimpson, Proc. Acad. Nat. Sci.* 1855.

"*Male.*—With stout inferior antennæ, the flagella of which form one-third of their length. First pair of gnathopoda small, chelate, with the penult and antepenult articulations produced below into thumb-like processes; second pair with ovate hands of moderate size.

"*Female.*—With slender inferior antennæ; flagella 12-articulate; superior ones as long as the first two joints of the others. First pair of gnathopoda simple; second pair with small hands, having a minute lateral finger. Colour pale brownish; eyes rather small, round, black. Caudal stylets short; rami subconical.

"Length three-fifths of an inch.

"*Hab.* Loo Choo." (*Stimpson.*)

We have not seen this species; but the first pair of gnathopoda being simple places it in this genus.

4. ORCHESTIA, *Leach.*

This genus, founded by Dr. Leach, is separated from the last by a very slight natural distinction. The first pair of gnathopoda possess a subcheliform character in *Orchestia*, whilst in *Talitrus* and *Orchestoidea* they are simple. The connexion is drawn still closer by the intermediate form, *Talorchestia*, in which the females possess the generic features of *Talitrus*, while the males retain those of *Orchestia*. The two very distinct genera of *Orchestia* and *Talitrus* are but the opposite extremities of the same natural group.

The antennæ resemble those of the three preceding genera; but we have not detected a sexual variation, as in *Talitrus Locusta*.

The first pair of gnathopoda exhibit the generic separation from *Talitrus*; they possess a subcheliform character, alike in form in both sexes, and do not appear to be very important organs.

The whole animal is more compressed than *Talitrus*, and is most commonly found of a dull greenish colour.

1. Orchestia Aucklandiæ, n. s. (Plate I. *a*. fig. 3.)

Male.—Eyes very small, round. Superior antennæ reaching to the extremity of the penultimate joint of the peduncle of the inferior. Inferior antennæ nearly one-third the length of the animal. First pair of gnathopoda having the carpus longer than the propodos, with a tubercle on the inferior margin; the palm produced into a rounded tubercle. Second pair of gnathopoda broader at the palm than at the carpus; palm slightly oblique, the inferior half raised higher than the half nearest the base of the dactylos, and fringed with short, equidistant, solitary hairs; a notch near the inferior angle separates a tooth from the rest of the palm; dactylos excavated near the base.

Female.—The first pair of gnathopoda differ from those of the male in being longer and slighter: the second pair of gnathopoda in having the carpus longer than the propodos, and not inferiorly tuberculated. The animal is generally very smooth, clean, and free from hairs.

Length rather more than an inch.

Hab. Auckland.

The specimen from which the species is described was procured during the Expedition of the Astrolabe, and, with many others, was kindly entrusted to me for examination by M. Milne-Edwards. It is preserved in the Museum of the Jardin des Plantes at Paris.

2. Orchestia Fuegensis, n. s. (Plate I. *a*. fig. 2.)

Male.—Eyes very small, round. Superior antennæ nearly as long as the peduncle of the inferior. Inferior antennæ not one-fourth

the length of the animal; peduncle as long as the flagellum. First pair of gnathopoda having a prominent tubercle at the inferior margin of the carpus and the propodos; the palm not oblique, and much longer than the breadth of the joint; dactylos curved, shorter than palm. Second pair of gnathopoda having the propodos ovate, palm oblique, rather more than the inferior half raised, as in *O. Aucklandiæ*, and fringed with one long and two short solitary hairs alternately.

Female.—First pair of gnathopoda with the propodos having the inferior margin parallel with the superior; palm short; dactylos longer than the palm. Second pair of gnathopoda having the propodos and carpus subequal, and not tuberculated.

Length scarcely half an inch.

Hab. Port Famine.

This animal is generally much more spinous than *O. Aucklandiæ*. The specimen from which this species was taken was procured during the Expedition of the Zélée, and is preserved in the Museum of the Jardin des Plantes.

3. **Orchestia longicornis.** (Plate III. fig. 1.) B.M.

Orchestia longicornis, *Say*, *Proc. Acad. Philad.* vol. i. pt. 2. p. 386.
Edwards, Hist. des Crust. t. iii. p. 18.

Male.—Eyes large. Upper antennæ reaching to the end of the penultimate joint of the peduncle of the lower. Lower antennæ nearly as long as the animal; the peduncle about half the length of the antennæ; the last joint twice the length of the penultimate. First pair of gnathopoda with the carpus nearly as long again as the propodos, and furnished with a small tubercle; dactylos longer than the palm. Propodos of the second pair of gnathopoda largely developed, the palm being concave or hollow. The third pair of pereiopoda robust, and shorter than the two posterior.

Length 1 inch.

Hab. New Jersey (*Say*, by whom the specimen, from which our figure is taken, was presented to the Museum).

4. **Orchestia Gryllus.** (Plate III. fig. 2.) B.M.

Orchestia Gryllus, *Bosc, Crust.* ii. t. 15. f. 1, 2.
Say, Journ. Acad. Philad. i. 386.
Scamballa Sayana, *Leach MS., and in White's Cat. Crust. in B.M.*

Upper antennæ reaching slightly beyond the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ about one-third the length of the animal; last joint of the peduncle longer than the preceding. The first pair of gnathopoda having the carpus somewhat longer than the propodos: the palm enlarged: dactylos

as long as the palm; an elongated tubercle upon the carpus. The second pair of gnathopoda having the propodos large, ovate; palm convex, without a tooth, against which the smooth dactylos impinges closely. The three posterior pairs of pereiopoda subequal, the last being perhaps the longest; the basos of the last two members have their posterior margins round and smooth.

Length $\frac{11}{20}$ths of an inch.

Hab. Sandy beaches on coast of United States.

The specimen from which the figure and description are taken was presented to the British Museum by Mr. Thomas Gay.

5. Orchestia Platensis. (Plate III. fig. 3.) B.M.

Orchestia Platensis, *Kröyer, Natur. Tidsk.* p. 304, 1844.
Fr. Müller, Wiegm. Arch. 1848.
Orchestia Tristensis, *Leach, MS. B.M., and White's Cat. of Crust. in B.M.*

Upper antennæ reaching beyond the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ about one-third the length of the animal; the flagellum half as long as the peduncle, the last joint of which is longer than the preceding one. First pair of gnathopoda having the propodos and carpus nearly equal in length; the palm but slightly enlarged; dactylos as long as the palm; a small tubercle exists on the carpus. The second pair of gnathopoda having the propodos large, ovate; palm convex, without a tooth, against which the smooth dactylos impinges closely; third pair of pereiopoda nearly as long as the fourth, and the fourth as long as the fifth; the squamiform basos in each of the last two members has the posterior margin smooth.

Nat. size $\frac{10}{20}$ths of an inch.

Hab. Monte Video (*Kröyer*); Island of Tristan d'Acunha. Presented by Capt. Carmichael.

In comparing this species with the last, I can detect nothing that warrants their specific distinction beyond the fact of one being in the northern and the other in the southern hemisphere, with the wide zone of the tropics between them, from which, as yet, no species of *Orchestia* has been recorded.

The description given by Fr. Müller of *O. Platensis* agrees with the specimen marked *Tristensis* in the British Museum in all respects, excepting that *O. Platensis* has the posterior pair of pereiopoda dilated, as is the case with aged males in some species.

6. Orchestia Traskiana. (Plate III. fig. 4.) B.M.

Orchestia Traskiana, *Stimpson, Proc. Cal. Acad. Nat. Sci.* i. 90; *Journ. Bost. Soc. Nat. Hist.* vol. vi.

Male.—Eyes not large. Upper antennæ reaching to the extremity

of the penultimate articulation of the peduncle of the lower. Lower antennæ more than one-third the length of the animal; the flagellum as long as the peduncle. The first pair of gnathopoda having the palm of the propodos broad, with a notch near the base of the dactylos, which is shorter than the palm; a large tubercle is produced upon the carpus, and a small one upon the meros. The second pair of gnathopoda large, ovate; palm convex, without teeth, spinous, terminating in a slight notch, which receives the apex of the smooth curved dactylos.

Length $\frac{11}{20}$ths of an inch.

"In the female the first pair of gnathopoda resemble those of the male, except in being smaller, having less produced lobes, and a comparatively longer dactylos; those of the second pair with a small elongated propodos, with a rounded extremity, and a rudimentary dactylos applied at about the middle of the lower edge. In *both*, the fourth and fifth pairs of perciopoda are about equal in length. Eyes rounded, black. Colour light grey, sometimes greenish or brownish, always very pale." (*Stimpson, Journ. Bost. Soc. Nat. Hist.* vol. vi.)

Hab. San Francisco (*Stimpson*).

The figure and description of the male have been taken from a specimen sent to me by the author.

7. **Orchestia Novæ-Zealandiæ**, n. s. (Plate III. fig. 5.) B.M.

Female.—Upper antennæ reaching beyond the extremity of the penultimate joint of the lower. Lower antennæ more than half as long as the animal; the flagellum longer than the peduncle, and spinous; the penultimate is nearly as long as the ultimate joint of the peduncle. The first pair of gnathopoda having the propodos well developed, and longer than the carpus; dactylos scarcely longer than the palm. The second pair of gnathopoda having the propodos and carpus about equal in length; the dactylos falls considerably short of the extremity of the propodos. Third pair of perciopoda as long as the fourth and fifth; basos long.

Length $\frac{5}{20}$ths of an inch.

Hab. New Zealand. Presented by Captain Bolton.

8. **Orchestia Telluris**, n. s. B.M.

(Plate III. fig. 6, male. Plate IV. fig. 4, female.)

Male.—Eyes round, large. Upper antennæ reaching rather beyond the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ short, being scarcely one-fourth the length of the animal: the flagellum not quite so long as the peduncle; the

penultimate joint of the peduncle shorter than the ultimate. The first pair of gnathopoda having the carpus a little longer than the propodos, and furnished with a small protuberance; dactylos slight, and reaching beyond the extremity of the palm, which itself is considerably produced. The second pair of gnathopoda having the hand triangular, with an indentation in the palm corresponding to a protuberance in the dactylos. Third and fourth pairs of pereiopoda subequal. Fifth very much longer; the carpus on the fifth pair of pereiopoda is furnished with a squamiform plate of considerable dimensions, which is concave on the side next the animal, and convex upon the opposite.

Length $\frac{10}{20}$ths of an inch.

Female.—Upper antennæ reaching to the extremity of the penultimate articulation of the peduncle of the lower. The first pair of gnathopoda having the palm of the propodos convex: there is an indentation in the meros, as if it received the extremity of the propodos when folded in (the specimen was a dried one; hence this may be a doubtful specific diagnosis). The dactylos of the second pair of gnathopoda articulates remotely from the apex of the propodos, which is turned up at the extremity. The fifth coxa as deep as the fourth. The basos of each of the three posterior pereiopoda is serrated posteriorly, and furnished with short, sharp, stout hairs anteriorly. Carpus of the posterior pair of pereiopoda not largely developed.

Length $\frac{7}{20}$ths of an inch.

Hab. New Zealand.

The specimens of this species were taken under dead leaves in the woods by Mr. Hook, during the voyage of the Erebus and Terror, and presented to the British Museum.

9. **Orchestia sylvicola.** (Plate III. fig. 7.) B.M.

Orchestia sylvicola, *Dana, Proc. Amer. Acad. Sci.* ii. 202; *U. S. Explor. Exped.* p. 874, pl. 59. f. 2, 3.

Male.—Eyes round, not large. Upper antennæ long, reaching beyond the penultimate joint of the lower. Lower antennæ slight, more than half the length of the animal; the flagellum as long as the peduncle, the last joint of which is as long again as the penultimate. The first pair of gnathopoda having the propodos but little shorter than the carpus; a large tubercle is present on the meros and carpus, and the extremity of the propodos is broadly developed; dactylos not longer than the palm. Propodos of the second pair of

gnathopoda long, with the palm forming two-thirds of the inferior margin. Third pair of pereiopoda nearly as long as the fourth.

Length $\frac{12}{20}$ths of an inch.

Hab. New Zealand. Voyage of the Erebus and Terror (*Sir J. C. Ross*).

This species was first described by Prof. Dana, who procured it, during the United States' Exploring Expedition, "from moist soil in the bottom of the extinct volcano of Taiamai, twenty miles from the sea, and about the joints of succulent plants."

The specimen from which our figure is taken has been in the British Museum for many years. It was found associated with *O. Telluris*.

10. Orchestia megalophthalma. (Plate III. fig. 8.) B.M.

Orchestia megalophthalmus, *Leach MS., and White's Cat. Crust. B.M.*

Male.—Eyes round, very large, almost meeting on the top of the head. Upper antennæ reaching quite to the end of the penultimate joint of the lower. Lower antennæ one-third the length of the animal; peduncle rather longer than the flagellum, the last joint of which is longer than the penultimate. The carpus of the first pair of gnathopoda longer than the propodos; a prominent tubercle on the carpus; the dactylos slight, and longer than the palm of the propodos; the propodos of the second pair of gnathopoda having the palm slightly rounded. Third pair of pereiopoda scarcely half as long as the two posterior.

Length $\frac{15}{20}$ths of an inch.

Hab. Unknown.

11. Orchestia Cloquetii. (Plate IV. fig. 1.)

Orchestia Cloquetii, (*Audouin*) *Savigny, Egypte, Crust.* pl. 11. f. 9.
Talitrus Cloquetii, *Edw. Ann. des Sc. Nat.* t. xx. p. 364; *Hist. des Crust.* t. iii. p. 15.
Guérin-Méneville, Expéd. Sc. de Morée, t. iii. p. 1.

Upper antennæ reaching quite to the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ about one-fourth the length of the animal; the flagellum as long as the peduncle, of which the ultimate segment is slightly longer than the preceding. The first pair of gnathopoda are short, and developed at the extremity into a minute hand. The second pair of gnathopoda have the propodos but slightly developed in breadth, so that the hand is formed by the impinging of the dactylos upon an articulation that is scarcely larger than the rest of the limb.

Hab. Egypt (*Savigny*).

M. Guérin, mistaking this species for a *Talitrus*, placed it in his third division of that genus, or those which have the first pair of legs smaller than the second.

Our figure and description are taken from the figure given in Savigny's work.

12. Orchestia Capensis. (Plate IV. fig. 2.) B.M.

Orchestia Capensis, *Dana, U.S. Explor. Exped.* p. 866, pl. 58. f. 3.

Male.—Eyes rather large. Upper antennæ reaching to the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ half as long as the animal; the flagellum is not longer than the last joint of the peduncle, which joint is nearly as long again as the penultimate. First pair of gnathopoda with the palm indented or concave, and no tubercle on the carpus; dactylos longer than the palm and incurved. Propodos of second pair of gnathopoda well developed, and the palm deeply concave. Third pair of pereiopoda shorter than the fourth, robust. The basos of the three posterior pereiopoda disk-shaped.

Length $\frac{15}{20}$ths of an inch.

Hab. Australia. Dana found it at the Cape of Good Hope.

13. Orchestia Deshayesii. (Plate IV. fig. 3.) B.M.

Orchestia Deshayesii, *Audouin, Savigny, Egypte, Crust.* pl. 11. f. 8.
White, Cat. Brit. Crust. B.M.; *Hist. Brit. Crust.* p. 163.
Spence Bate, Report Brit. Amph. Brit. Assoc. 1855; *Synopsis of Amph. Ann. Nat. Hist.* Feb. 1857.
Gosse, Marine Zool. p. 142.

The last joint of the peduncle of the inferior antennæ longer than the preceding. Propodos of the second pair of gnathopoda having the posterior extremity of the palm armed with a strong tooth.

Length $\frac{12}{20}$ths of an inch.

This is a smaller and less common European species than either *O. littorea* or *O. Mediterranea*, which latter it much resembles in general appearance. The upper antennæ are rather shorter, scarcely reaching to half the penultimate joint of the peduncle of the lower antennæ, whereas in *O. Mediterranea* they reach quite to its extremity. The last joint of the peduncle of the lower antennæ is considerably longer than the preceding, whereas in *O. Mediterranea* they are subequal. But the great distinction lies in the second pair of gnathopoda, the propodos being furnished with a thumb in the form of a strong tooth at the posterior extremity of the palm. The third pair of pereiopoda are shorter than the fourth and fifth: the last pair resemble the preceding.

We are not aware of many of this species having been taken. A

solitary specimen from the British coast, in Dr. Leach's collection in the British Museum, enabled Mr. A. White to identify it with Audouin's Egyptian species.

Two specimens in the Collection of the Museum at the Plymouth Athenæum were taken by the late Dr. Edward Moore, on the rocks under Mount Batten. Professor Kinahan, who says they are local and rare, has taken a few at Carrickfergus.

We have never seen living specimens; but, judging from dead ones, it is of a somewhat lighter colour than the last species.

14. Orchestia Mediterranea. (Plate IV. fig. 5.) B.M.

Orchestia Mediterranea, *Costa, Rend. dell'Accad. Sc. di Napoli*, p. 171. 1853.
Orchestia constructa (young?), *Costa, l. c.*
Orchestia lævis, *Spence Bate, Synopsis of British Edriophthalmous Crustacea in Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 163.
Orchestia littorea (var.), *White, Hist. Brit. Crust.* pl. 10. f. 1.
Orchestia littorea, *Rathke, Fauna der Krym*, t. 5. f. 1–6.
Lucas, Expéd. dans l'Algérie.

Upper antennæ reaching quite to the extremity of the penultimate articulation of the peduncle of the lower. The propodos of the first pair of gnathopoda longer than the carpus. The propodos of the second pair of gnathopoda in the male well developed, and tapering towards the extremity, along the palm of which the dactylos impinges, but not closely, except near the extremity.

In this species the first segment of the pereion is very short, and the coxa of the first gnathopod is almost enveloped by that of the second. The first pair of gnathopoda have the propodos long and cylindrical, and furnished on the posterior margin with a few short hairs. The second pair of gnathopoda are long and tapering, very broad at the base, and gradually narrowed to the point of articulation with the dactylos; the palm is rather concave; the extremity of the impinging finger bites into a groove.

The second pair of gnathopoda in the female resemble the same pair in *Talitrus Locusta*, in having the dactylos articulating remotely from the apex of the propodos. The larvæ resemble the female in general characters, and particularly in the second pair of gnathopoda.

The third pair of pereiopoda have the coxæ equally divided, as in *Talitrus*, and the whole organ is shorter than the fourth and fifth, which are subequal. In the female and young these last two generally resemble each other: but in the adult male the posterior is peculiarly developed, the carpus being as broad as it is long; and the meros triangular, the broadest diameter being connected with the carpus, from whence it gradually decreases in width to the articulation with the ischium, where it is reduced to the ordinary diameter of the leg.

The great size of the carpus and meros of the last leg is due to a thinning-out of the integument into a scale-like form, which is most apparent upon the outer side of the leg, and, according to Rathke*, increases with age. The muscular portion of the leg may be seen upon the under surface of the squamiform protuberance, extending the whole length of the joint.

By the aid of this enlargement the male is enabled to hold itself in an upright position, and to walk along the surface of the rocks, whereas the female, which wants this protuberance, is reduced to wriggle along upon its side, or to leap. This latter mode of progression it possesses in common with the male, using the caudal stylets, which are bent under the abdomen, in the same manner as *Talitrus*; they are well adapted for that purpose. The stylets are often worn away by friction against stones.

The posterior pleopoda resemble those of *Talitrus*; the two anterior terminate in two branches each, and the posterior in one. The telson is annulate, flattened, the alimentary canal passing through it; the apex is fringed with a few fine hairs.

In form, the hairs upon the legs and body differ from those of *Talitrus* in having a sharper extremity, with a stouter secondary appendage. According to most writers, the habit of this animal is very similar to that of *Talitrus*, with which it is said to be associated; but according to my own experience, *Orchestiæ* represent the *Talitri* on rocky shores. I do not recollect taking *Talitri* except on a sandy beach, nor *Orchestiæ* but upon rocky and stony ground. I have taken *O. Mediterranea* in Langland Bay, Glamorganshire, under stones and grass, associated with terrestrial Isopoda, considerably above the highest level of spring tides, though not, probably, beyond the occasional reach of the spray. Professor Kinahan has taken them in Dublin Bay, seven feet above tide-mark, associated with *Oniscus murarius*, *O. fossor*, *Armadillo vulgaris*, and *Porcellio scaber*.

The colour of this species is dull olive-green, inclining to bronze along the back, which yields a metallic lustre; the propodos of the two pairs of gnathopoda are lighter in colour, and often tipped with bright orange.

We have taken the females of a light fawn-colour, and so like to *Talitrus* that we mistook them for that genus, until led to the discovery of their true character by accidentally examining some of the dermal tissue under the microscope.

The ova, during the process of incubation, are of a bright purple colour; but the larvæ, as they appear when ready to quit the pouch of the mother, are of a bright orange tint. They hop vigorously as soon as liberated.

They are probably extensive in their geographical range, since Rathke states having found them at Theodosia, in the Crimea. Costa has taken them on the coast of Naples, and Lucas on the coast of Algeria.

* *Fauna der Krym.* It cannot be ranked among the specific characters, since it is never found in the young.

15. **Orchestia trigonocheirus**, n. s. (Plate IV. fig. 6.) B.M.

Orchestia trigonocheirus, *Leach MS. B.M.*

Male.—Eyes small. Upper antennæ not reaching to the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ half as long as the entire animal; flagellum longer than the peduncle, the last joint of which is rather longer than the preceding. First pair of gnathopoda having the propodos shorter than the carpus; palm extending beyond the extremity of the dactylos; a tubercle projects from the carpus. Second pair of gnathopoda having the propodos large, ovate; palm straight, spinous. Third pair of pereiopoda scarcely shorter than the fourth and fifth; fifth having the carpus and meros broadly distended.

Length $\frac{13}{20}$ths of an inch.

Hab. ——?

16. **Orchestia scutigerula.** (Plate IV. fig. 7.) B.M.

Orchestia scutigerula, *Dana, U. S. Explor. Exped.* p. 864, pl. 68. f. 2.

Male.—Eyes small. Upper antennæ reaching to the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ half as long as the animal; flagellum rather longer than the peduncle. First pair of gnathopoda having the carpus and propodos nearly equal; a very prominent tubercle on the carpus; dactylos not reaching beyond the palm of the propodos. Propodos of the second pair of gnathopoda large; palm nearly at right angles with the joint, and furnished near the centre with a small blunt triangular tooth. Third pair of pereiopoda nearly as long as the fourth; basos developed, round. Fifth much longer than the preceding, and having the basos squamiform and monstrously developed, concave on the side towards the animal, convex on the opposite.

"*Female*.—Basos of the posterior pair of pereiopoda much narrower than in the male. First pair of gnathopoda unguiculate and hardly subchelate, the propodos not being broader at the apex, the inferior angle not produced, and the unguiform dactylos stout and fully twice as long as the palm; carpus a little longer than the propodos, and sparingly broader. Second pair of gnathopoda having a minute and subspatulate propodos, rounded at the apex; dactylos lateral, subapical, not reaching to the extremity of the propodos; meros arcuate below."—*Dana*.

Length $\frac{15}{20}$ths of an inch.

The specimen in the British Museum has the squamiform development larger than in Dana's figure, and the rounded protuberance

upon the palm is marked by a distinct tooth. It is in the collection presented by the Admiralty, having been taken during the Antarctic expedition.

Hab. Hermit Island. It was found by Dana abundant among the sea-weed thrown up on the shores of Nassau Bay, Terra del Fuego.

17. Orchestia littorea. (Plate IV. fig. 8.) B.M.

Orchestia littorea, *Leach, Edin. Encyc.* vii. pl. 221. f. 6; *Linn. Trans.* xi.
Desm. Cons. t. 45. f. 3.
Edwards, Ann. des Sc. Nat. t. xx.; *Hist. des Crust.* t. iii. p. 16.
Gosse, Marine Zool. p. 142.
White, Hist. of Brit. Crust. p. 162.
Spence Bate, Synopsis of Brit. Amph. in Ann. Nat. Hist. Feb. 1857.
Gammarus littoreus, *Montagu, Linn. Trans.* ix. p. 96. t. 4. f. 4.
Orchestia Montagui, *Audouin, Expl. Pl. Egypte,* pl. 11. f. 7.
Edwards, Hist. des Crust. t. iii. p. 17; *Ann. des Sc. Nat.* xx. p. 361.
(Not O. littorea, *Rathke, Faun. der Krym.*)

Male.—The superior antennæ reaching to the extremity of the penultimate articulation of the peduncle of the lower. The first pair of gnathopoda having the propodos shorter than the carpus; the dactylos reaching nearly to the extremity of the palm, where there is a projecting tubercle; the palm is concave, but slightly raised at the bottom of the hollow, and fringed with hairs; a prominent tubercle projects from the lower anterior extremity of the carpus. The second pair of gnathopoda in the male are large and well developed; the palm, slightly oblique, convex; posteriorly there is a short obtuse tooth, against which the extremity of the dactylos impinges. In the adult male the carpus and meros of the posterior pair of perciopoda are thicker, as in *O. Mediterranea.* Length $\frac{1}{2}\frac{3}{0}$ths of an inch.

Upon the upper edge of the propodos of the first pair of gnathopoda there are generally several fasciculi of hairs. Without placing much stress upon them as a specific distinction, I have found them constant whenever I have counted them. In this species there are six; in *Telluris* there are but three; in *Mediterranea* but one; in *Traskiana* four; in *Gryllus* four; in *longicornis* eight; and so on.

This is by far the most common of our British species, and is the one for which Dr. Leach made the generic name. It appears to have been found on all the western and southern coasts of Europe. Montagu first took it on the Devonshire coast; it has been taken in Ireland by Dr. Kinahan and Mr. Thompson, in France by Edwards, and in Italy by Risso. In the Jardin des Plantes are specimens sent from Madeira by M. Morelet; and Savigny procured the specimen from Egypt that M. Audouin named after our English pioneer Montagu.

I believe the original specimen brought by Savigny is not preserved; but having had an opportunity, through the kindness of M. Milne-Edwards, of examining the specimens named *Montagui*

and *littorea*, in the Museum of the Jardin des Plantes, I could perceive no feature that would justify a separation of them from the same species. M. Lucas also most kindly allowed me to examine those that he brought with him from Algeria; and again I felt convinced that those which he has named *O. Montagui*, in his great and valuable work, are identical with the types of Montagu's specimen preserved in the British Museum.

18. Orchestia Bottæ.

Orchestia Bottæ, *Edwards, Hist. Nat. Crust.* t. iii. p. 17.

This appears to be a very doubtful species. The only distinction which M. Edwards perceived between it and *Orchestia sauteuse* (*littorea*?) is one that is dependent upon age—the last pair of pereiopoda are not broadly developed. This being a character that is not present until after the male has attained its full dimensions, it can scarcely be accepted as the definition of a separate species.

I have previously stated having come to the conclusion, after examining the specimens in the Museum of the Jardin des Plantes, that *O. Montagui* of Audouin is identical with *O. littorea* of Montagu; *O. Bottæ*, the author says, is very much like *O. littorea*; and Egypt is given by Savigny as the habitat of *O. Montagui*; we may therefore assume that *O. Bottæ* is the young form of that species: but there is one circumstance that must cause us to hesitate before pronouncing it certain—*O. littorea* belongs to the Mediterranean, whereas *O. Bottæ* lives on the shores of the Red Sea.

The original specimen not being preserved, the name can only be retained by courtesy, until opportunity occurs for a more extended examination of the *Orchestiæ* of the eastern shores of Egypt.

"Krauss mentions that the *O. Bottæ*, Edwards, is found in South Africa, at Port Natal*."

19. Orchestia spinipalma. (Plate IV. fig. 9.)

Orchestia spinipalma, *Dana, Proc. Amer. Acad. Sci.* ii. 203; *U. S. Explor. Exped.* p. 875, pl. 59. f. 4.

"*Male*.—Coxæ rather narrow, fifth slightly narrower than fourth. Inferior antennæ scarcely longer than half the body, setæ very minute; flagellum as long as base, the joints mostly a little oblong, setæ half the diameter of the joints in length. Superior antennæ one-fourth the length of base of inferior; the flagellum three- to five-jointed. First pair of gnathopoda small and weak; propodos minute, oblong, with the sides parallel, and apex straight, truncate; dactylos minute. Second pair of gnathopoda stout; propodos subovate, palm a little excavate and spinulose; dactylos elongate,

* Dana, U.S. Explor. Exped. p. 867.

somewhat shorter than propodos. Following perciopoda slender; the next two pairs subequal; last two pairs subequal; third pair shortest; setæ of the margins of the propodos equal.

"*Female*.—Propodos of second pair of gnathopoda minute, obovate, oblong, rounded at apex; dactylos lateral, longitudinal, its apex reaching nearly to the extremity of the propodos.

"Length, half an inch.

"Tongatabu, under sea-weed on beaches."—*Dana*.

20. Orchestia tenuis. (Plate IV. fig. 10.)

Orchestia tenuis, *Dana, Proc. Amer. Acad. Sci.* ii. 202; *U.S. Explor. Exped.* p. 872, pl. 59. f. 1.

"*Female*.—Coxæ rather narrow. Inferior antennæ slender, about half as long as body; flagellum very slender, much longer than base; joints oblong, setæ hardly shorter than joints. Superior antennæ about as long as base of inferior. Gnathopoda quite small and weak; first pair much the smaller; propodos of second pair very small, oblong, bent backward, truncated half across towards apex; dactylos minute, rather remote from extremity, and nearly transverse. First and second pairs of perciopoda small; the second pair smaller than the first; three posterior pairs very unequal, increasing regularly in length; fifth pair nearly twice longer than third; setæ short, scarcely longer than diameter of joints.

"Length, half an inch.

"*Hab*. Bay of Islands, New Zealand."—*Dana*.

21. Orchestia nitida. (Plate V. fig. 1.)

Orchestia nitida, *Dana, U.S. Explor. Exped.* p. 868, pl. 58. f. 5; *Proc. Amer. Acad. Sci.* ii. 204.

"Coxæ of moderate size, fifth smaller than fourth. Inferior antennæ shorter than half the body; last two basal joints subequal; flagellum longer than base, moniliform, twelve- to fourteen-jointed; joints slightly oblong, setæ very minute. Superior antennæ about half as long as base of inferior, and flagellum five-jointed. First pair of gnathopoda having a small propodos, slightly oblong, somewhat securiform, at apex somewhat broader and obliquely truncate; the carpus below near propodos gibbous. Propodos of second pair large, subovate; palm straight, nearly longitudinal; dactylos longer than half the propodos. Two anterior pairs of perciopoda subequal, the rest gradually increasing in length, rather short; setæ of propodos much shorter than the semidia-

meter of the joint; basos broad, margin minutely serrulate. Outer branch of first pair of stylets naked.

"Length, one-third of an inch.

"*Hab.* From among floating Fucus, near the shores of Terra del Fuego. Caught with a hand-net.

"This species resembles the *Orchestia Euchore* of Fr. Müller (Archiv für Nat. 1848, p. 53, pl. 4); but in that the finger of the large hand is shorter, and the palm has an emargination below its middle."—*Dana.*

22. Orchestia Chilensis. (Plate V. fig. 2.)

Orchestia Chilensis, *Edwards, Hist. des Crust.* t. iii. p. 18.
Dana, U.S. Explor. Exped. p. 868, pl. 58. f. 4.

Male.—Superior antennæ reaching to the extremity of the penultimate joint of the peduncle of the inferior. Inferior antennæ scarcely half as long as the animal; flagellum as long as the peduncle. First pair of gnathopoda having the inferior angle of the palm rounded, scarcely defined; dactylos as long as the palm. Second pair of gnathopoda ovate; palm oblique, spinous; a small tooth or tubercle near the base of the dactylos; dactylos long, bent near the middle.

"*Female.*—Coxæ rather large, fifth but slightly shorter than fourth. Inferior antennæ half shorter than the body; base rather short, last joint of base hardly longer than preceding; flagellum a little longer than base, nineteen- to twenty-jointed; joints sparingly oblong, setæ very minute. First pair of gnathopoda shorter and more slender than those of second; propodos truncate at apex, and here a little broader; dactylos as long as apical margin. Propodos of second pair subspatulate; dactylos marginal, longitudinal, hardly reaching to apex. Pereiopoda with the setæ minute, and rather few; those of the propodos on its under surface half as long as width of joint; those on the upper margin much shorter. Three posterior pairs of pereiopoda slender; third considerably shorter than fourth; fourth and fifth equal; coxæ of seventh pair somewhat broader than those of preceding."

Length eight lines.

Hab. Karoa, New Zealand (*M. Jacquinot*); Valparaiso (*Dana*); coasts of Chili (*Edw.*)

The description of the male is taken from specimens entrusted to me by Prof. M.-Edwards; that of the female from Dana's work, from which also the figure is copied. I have had the opportunity of examining the type, preserved in the Museum of the Jardin des Plantes, from which the second gnathopod (Pl. I.*a.* f. 8) was drawn.

23. Orchestia quadrimana. (Plate V. fig. 3.)

Orchestia quadrimana, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 204; *U.S. Explor. Exped.* p. 879, pl. 59. f. 7.

"*Male*.—Coxæ rather broad, fifth shorter than fourth. Inferior antennæ hardly half as long as the body, neatly setose; base short, flagellum sparingly longer than base; joints not oblong, cylindrical; setæ verticillate, and nearly twice longer than joints. Superior antennæ nearly half shorter than base of inferior. First pair of gnathopoda minute; propodos subtriangular, apex truncate and a little excavate. Propodos of second pair stout, quadrate, a little oblong; apex nearly straight, truncate, the palm of the propodos consequently transverse, or but slightly oblique, somewhat excavate. First and second pairs of pereiopoda weak, subequal; third, fourth and fifth similar, very unequal, but gradually increasing in length; third half shorter than fifth; setæ of propodos numerous, rather crowded, and exceeding the diameter of the joint in length.

"Length seven lines.

"*Hab.* Illawarra, New South Wales."—*Dana.*

24. Orchestia serrulata. (Plate V. fig. 4.)

Orchestia serrulata, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 204; *U.S. Explor. Exped.* p. 871, pl. 58. f. 7.

"*Male*.—Coxæ moderately broad, fifth anteriorly not narrower than fourth. Inferior antennæ about half as long as body, flagellum as long as base; joints not oblong, setæ nearly obsolete. Superior antennæ hardly longer than half the base of the inferior; flagellum seven- or eight-jointed. Propodos of first pair of gnathopoda quite small, broader at apex, straight, truncate, and a little excavate. Propodos of second pair large, suboval; palm infero-subapical; this part of inferior margin excavate and minutely spinulose. First and second pairs of pereiopoda slender, subequal; the three posterior gradually increase in length; similar setæ very minute and few; first joint very broad, serrulate behind, and having two or three minute setæ on the front margin.

"*Female* (?).—First pair of gnathopoda with a very small propodos, short, linear in form, not broader at apex, which is truncate; carpus longer and sparingly broader, below nearly straight; dactylos terminal, slightly oblique though transverse, very short. Flagellum of inferior antennæ fourteen-jointed.

"Length nine and a half lines.

"*Hab.* From among sea-weed thrown up by the tides, on the shores of islands called the Black Rocks, in the Bay of Islands, New Zealand."—*Dana.*

25. Orchestia dispar. (Plate V. fig. 5.)

Orchestia dispar, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 203; *U.S. Explor. Exped.* p. 878, pl. 59. f. 6.

"*Male*.—Coxæ of moderate size, fifth but little shorter than fourth. Inferior antennæ scarcely half as long as body, last two joints of base subequal; flagellum longer than base; joints hardly oblong; setæ not longer than half the diameter of the joints. Superior antennæ shorter than base of inferior. First pair of gnathopoda having the propodos quite small, broadest at apex, and obliquely truncate, with the apical margin excavate. Propodos of second pair stout, broad, subelliptical, obliquely subtruncate; palm of propodos a little sinuous, pubescent. First pair of pereiopoda longer than second; fifth a little shorter than fourth, and *having the meros and carpus stout, very broad*, and much compressed; setæ very short, on propodos about as long as semidiameter of the joint.

"Length six to seven lines.

"*Hab.* Sea-shores of Illawarra, New South Wales."—*Dana.*

26. Orchestia Pickeringii. (Plate V. fig. 6.)

Orchestia Pickeringii, *Dana, U.S. Explor. Exped.* p. 882, pl. 59. f. 9. *Stimpson, Journ. Bost. Soc. Nat. Hist.* vol. vi.

"*Male*.—Coxæ of moderate size, fifth a little shorter than fourth. Inferior antennæ about half as long as body; base rather short, flagellum longer than base; joints oblong; setæ few, not longer than semidiameter of joints. Superior antennæ not half as long as base of inferior; flagellum three-jointed. First pair of gnathopoda very small; propodos subtriangular, oblong; apex truncate, broader; dactylos short. Propodos of second pair very stout, ovate, above and below arcuate, without a tooth or angle below at termination of palm; palm convex and not excavate, naked, having two very low prominences near base of dactylos; the first rounded and minutely setulous, the second subrectangular. Propodos of posterior pereiopoda slender; setæ in six sets on under side, not longer than half the diameter of the joint, still shorter on upper side of joint.

"Length five to six lines."—*Dana.*

Hab. Kauai or Oahu (*Dana, l. c.* p. 1595); California (*LeConte*), *Stimpson.*

27. Orchestia Hawaiensis. (Plate V. fig. 7.)

Orchestia Hawaiensis, *Dana, U.S. Explor. Exped.* p. 881, pl. 59. f. 8.

"*Female*.—Coxæ rather large, fifth hardly shorter than fourth. Antennæ quite slender; inferior pair somewhat longer than half

the body; base rather long, flagellum longer than base, seventeen- to eighteen-jointed; joints quite oblong; setæ few, not longer than diameter of joint. Superior antennæ long, hardly shorter than base of inferior; flagellum seven-jointed, joints long. Anterior gnathopoda imperfectly subchelate, almost unguiculate; the propodos oblong, narrower at apex, and not properly truncate; dactylos a little longer than the width of the joint. Second pair of gnathopoda with the propodos subspatulate, narrow, minute; dactylos subapical, nearly transverse; meros gibbous and fine, scabrous below. Perciopoda slender; first and second pairs long, third not shorter than second, the three posterior gradually increasing in length; setæ of propodos of fifth pair equally long on both margins, and not longer than the diameter of the joint, six sets below, seven above. Outer branch of first pair of stylets naked, a very long apical seta.

"Length eight or nine lines.

"*Hab.* Oahu or Kauai, Hawaiian Islands."—*Dana.*

28. **Orchestia Tahitensis.** (Plate V. fig. 8.)

Orchestia Tahitensis, *Dana, U.S. Explor. Exped.* p. 877, pl. 59. f. 5.
Orchestia rectimana, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 203.

"*Female.*—Coxæ rather broad, margin minutely setulose. Inferior antennæ about half as long as body; flagellum little longer than base, the joints a little oblong; setæ not longer than diameter of joints. Superior antennæ one-third shorter than base of inferior; flagellum about seven-jointed. Gnathopoda quite small; first pair having a minute claw and a short palm to propodos; propodos of second pair oblong, spatulate, with rounded apex, minute; dactylos lateral and longitudinal, hardly reaching to apex of joint. Two anterior pairs of perciopoda subequal, last three pairs not very unequal; basos very broad, and posterior margin setulose, setæ of propodos very short.

"Length one-fourth to one-third of an inch.

"*Hab.* In damp places among leaves, and under rotten wood in the damp earth, at 1500 feet elevation, on the island of Tahiti, several miles from the sea."—*Dana.*

29. **Orchestia Euchore.** (Plate V. fig. 9.)

Orchestia Euchore, *Fr. Müller, Wiegm. Archiv für Naturg.* 1848, p. 61, t. 14. f. 1.

Male.—Eyes round. Superior antennæ not reaching to the extremity of the penultimate joint of the peduncle of the inferior. Inferior antennæ having the peduncle as long as the flagellum, which

consists of about eighteen articulations. First pair of gnathopoda having the propodos dilated into a broad palm, and a tubercle upon the inferior margin of the carpus; the dactylos armed with two spinules on the interior margin. Second pair of gnathopoda having the propodos oval; palm convex, fringed with equidistant solitary cilia, and defined at the inferior angle by a small tooth. Posterior pair of pereiopoda having the carpus dilated. Telson emarginate.

Female.—First pair of gnathopoda having the inferior margin of the propodos parallel with the superior; palm short, shorter than the dactylos.

Length five lines.

Hab. Island of Rügen, on the stony beach between Sassnitz and the Stubenkammer, in great quantities (*Fr. Müller*).

30. **Orchestia Gryphus.** (Plate V. fig. 10.)

Orchestia Gryphus, *Fr. Müller, Wiegm. Archiv für Naturg.* p. 62, pl. 4. f. 18, 1848.

Male.—Eyes round. Superior antennæ shorter than the cephalon. Inferior antennæ about half the length of the animal; penultimate joint of the peduncle about half the length of the ultimate; flagellum consisting of about twenty articulations. First pair of gnathopoda having the inferior margin of the propodos parallel with the superior; the palm defined by a tubercle; dactylos armed with a single spinule upon the interior margin; carpus with a tubercle upon the antero-inferior margin. Second pair of gnathopoda having the propodos long, tapering; palm almost parallel with the upper margin, fringed with cilia, the inferior angle produced anteriorly into an immense tooth about half as long as the propodos; dactylos fringed upon the inner margin with equidistant, short, solitary hairs. Posterior pair of pereiopoda having the carpus not dilated. Telson emarginate.

Length four lines. Smooth and shining.

Hab. Island of Rügen, on the sandy shores between the Peerd (near Mönchgut) and the Kiekower, associated with *Talitrus Locusta*. A single specimen only was found (*Fr. Müller*).

5. ALLORCHESTES.

Allorchestes, *Dana, U.S. Explor. Exped.* p. 883.

Superior antennæ as long as the peduncle of the inferior. The basal articulations imperfectly fused into the facial wall of the cephalon. Olfactory spine rudimentary. Mandibles without an appendage. Maxillipeds furnished with pointed dactylos. Both pairs of gnathopoda subcheliform

This genus has been established by Dana to receive those Amphipoda which strongly assimilate to the *Orchestiæ*, but have the superior antennæ of greater length and importance. In the *Orchestiæ* they are almost rudimentary; in this genus they reach quite to, and often beyond, the peduncle of the inferior.

The peduncle of the inferior antennæ has only three joints exposed; but the first two are not so completely fused with the anterior (or facial) wall of the head as in *Orchestia* and *Talitrus*. A small olfactory denticle is visible. The mandibles are without appendages. The maxillipeds terminate in a sharp unguiculate dactylos. The propoda of both pairs of gnathopoda are subcheliform in both sexes; the anterior pair small, the second generally larger and more powerful. In the female, those of the second pair, although occasionally smaller than in the male, are never rudimentary, and have the carpus produced more or less along the inferior margin of the propodos.

The coxæ are squamiform and well developed, scarcely so deep as the body of the animal; those of the third pair of perciopoda are shorter than the fourth and subequally divided, the posterior half being generally the smaller. The perciopoda are short and robust; the third pair are generally the shortest.

The two penultimate pairs of pleopoda are short and strong, with double short styliform rami; the posterior pair are furnished with but a single branch. The telson single.

In habit, as in structure, *Allorchestes* occupies a position between *Orchestia* and the Gammariform type. It is a true littoral genus, dwelling under weed fresh wetted by the sea, in shallow pools and crevices of the rocks which the tide leaves bare at every ebb. Only one species, so far as we are aware, has been taken with the dredge: *A. media* was so taken in two or three separate localities.

The length of the upper antennæ, the presence of an olfactory denticle upon the inferior antennæ, and the small size of the coxæ of the third pair of perciopoda are evidences of an approximation towards the Natatorial tribe; whereas the incorporation of the basal joints of the inferior antennæ in the anterior wall of the cephalon, the absence of any appendage to the mandibles, the large size of the second pair of gnathopoda, the shortness of the posterior pleopoda, which are also single-branched, the robust character of the pleon, and the structure of the dermal tissue, together with the short stiff hairs, are all marks that draw the animal near to that of *Orchestia*.

Under the name of *Enone* (Eur. Mérid. p. 96), Risso has described a genus that appears to be identical with this; but his description is not sufficiently distinct to allow of that name being used even as a synonym.

1. **Allorchestes Piedmontensis**, n. s. (Plate I. *a*. fig. 5.) B.M.

Eyes small and round. The upper antennæ not longer than the peduncle of the lower. Lower antennæ about half the length of

the animal; peduncle scarcely half the length of the antennæ. The gnathopoda small, the anterior being somewhat the larger.

Length $\frac{3}{20}$ths of an inch.

This species bears a close resemblance generally to *A. Nilssonii*, but differs from it in the greater relative length of the lower antennæ and in the form of the gnathopoda, and in the rare circumstance of the anterior being larger than the second. The palms are convex.

The figure is probably that of a female, which may account for the smallness of the second pair of gnathopoda.

It was taken on the coast of Piedmont by J. Gwyn Jeffreys, Esq.

2. **Allorchestes Ochotensis.** (Plate I. *a*. fig. 4.)

Allorchestes Ochotensis, *Brandt, Middendorf's Reise*, pl. 6. f. 27.

Male.—Eyes small and round. Upper antennæ nearly as long as the lower. Gnathopoda not very largely developed, the second being the larger; palms straight. The three anterior segments of the pleon posteriorly and dorsally developed into teeth.

Length nearly an inch.

Hab. Ochotsk.

3. **Allorchestes Knickerbockeri.** n. s. (Plate VI. fig. 1.) B.M.

Female.—The animal is compressed. The first and second segments of the pleon posteriorly and dorsally produced into a tooth. Eyes oval, not large. Superior antennæ nearly as long as the inferior, having the peduncle and flagellum nearly equal in length. Inferior antennæ one-third the length of the animal, and one-fourth longer than the superior; the last two articulations of the peduncle are equal; the flagellum is not longer than a single articulation of the peduncle; the articulations of the flagella of the antennæ three times their diameter in length. First pair of gnathopoda small and slender; the propodos is very long; the palm is produced forwards, and terminates in an obtuse point; the dactylos is short, and scarcely reaches to the extremity of the propodos; the carpus is nearly as long as the propodos, the inferior carpal process not much produced; meros broader than the carpus. Second pair of gnathopoda considerably larger than the first; the propodos is triangular; the palm is slightly convex, and has a notch near the inferior extremity to receive the point of the dactylos; carpus but slightly produced inferiorly. The three posterior pereiopoda nearly equal; the posterior margins of the squamiform basos serrated in each.

Length about $\frac{2}{20}$ths of an inch.

This animal was sent with a few others by Professor Say to the

British Museum, and labelled by him *Gammarus minus*; but it must have got there by accident, as it in no way agrees with that author's description of that species.

Hab. North America. In brooks, under stones (*Say*).

4. **Allorchestes carinatus**, n. s. (Plate VI. fig. 2.) B.M.

Eyes oval. Superior antennæ as long as the inferior; the articulations of the peduncle short, subequal, the basal one stoutest, and not so long as the flagellum. The inferior antennæ not so stout as the superior; the peduncle shorter than the flagellum. First gnathopod having the dactylos slight, sharp, and longer than the palm; the propodos is nearly three times longer than its diameter; the palm is anteriorly and inferiorly produced forwards; the carpus is as long as the propodos, slightly produced inferiorly and anteriorly. The second gnathopod moderately developed; propodos somewhat triangular, with the angles rounded; the palm oblique, and furnished with a solitary short stout spine between the palm and the inferior margin; carpus short, the inferior edge broadly developed.

Length $\frac{3}{20}$ths of an inch?

The specimen from which this description is taken is imperfect; it was labelled *Dexamine carinata* in the Collection of the British Museum. I have retained the specific name of *carinatus*, under the supposition that the lost part must have possessed a carina.

Hab. Italy.

5. **Allorchestes Novæ-Zealandiæ.** (Plate VI. fig. 3.) B.M.

Allorchestes Novi-Zealandiæ, *Dana, Proc. Amer. Acad. Sci.* ii. 207, female; *U.S. Explor. Exped.* p. 894, pl. 61. f. 1, male and female.
Allorchestes intrepida, *Dana, Proc. Amer. Acad. Sci.* ii. 207, male.

Male.—Eyes round and small. Superior antennæ with the peduncle as long as the flagellum. The peduncle of the inferior nearly as long as the superior antennæ, and longer than the flagellum; the whole organ is more than one-third of the length of the animal. Maxilliped having the dactylos slender, and as long as the propodos, which is also attenuate; the carpus is broad, and the three succeeding articulations bear only a generic signification. The first pair of gnathopoda have the dactylos more than twice as long as the palm; the propodos has the superior margin parallel with the inferior, consequently the palm is very short; the carpus is shorter than the propodos, and the carpal process is but moderately produced. The second pair of gnathopoda larger than the first; the propodos is ovate, tapering anteriorly; the palm is straight, and

occupies about half the length of the inferior margin; a small protuberance and spine mark the termination of the palm, which impinges against the apex of the dactylos; the carpus is shorter than the propodos, and has the inferior margin moderately produced. Third pair of pereiopoda shorter than the two next.

Female.—Propodos of the first pair of gnathopoda oblong, two margins nearly parallel, truncate at apex; dactylos not longer than breadth of propodos; carpus with a short triangular or rounded prolongation below. Propodos of the second pair a little larger, but of similar form; carpus long, produced below, and obtuse or rounded at the extremity; third joint also much produced.

Length $\frac{6}{20}$ths of an inch.

Hab. New Zealand (*Dr. Andrew Sinclair*, by whom it was presented to the Museum). "Bay of Islands, New Zealand, on the shores of Parua Harbour, in holes in wood bored by *Teredos*" (*Dana*).

6. **Allorchestes Nilssonii.** (Plate VI. fig. 4.) B.M.

Amphitoë Nilssonii, *Rathke, Beitr. zur Faun. Norwegens, Nov. Act.* xx. p. 264 *c*.

Amphitoë Prevostii, *Rathke, l. c.* p. 81, pl. 4. f. 5 (not *Edwards*).

Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. p. 22, 1851.

Allorchestes Danai, *Spence Bate, Brit. Assoc. Report*, 1855; *Ann. Nat. Hist.* Feb. 1857.

White, Manual of Brit. Crust. p. 163.

Male.—The body is rather compressed. Eyes small, round. Superior antennæ equal in length with the peduncle of the inferior; the auditory cilia are not appreciable, and the hairs or spines are arranged generally in bunches of three. Inferior antennæ about one-fourth the entire length of the animal; the articulations not longer than their diameter, except towards their extremities, and furnished with short stiff spines; the peduncle as long as the flagellum; the articulations of the peduncle gradually decrease in length and diameter; the third is little more important than the first of the flagellum, which consists of eight or nine joints; the first and second articulations of the peduncle are incorporated with the head, but not so completely as in *Talitrus* and *Orchestia*. A small olfactory denticle is present. Second pair of gnathopoda larger than the first; palm convex.

Length $\frac{6}{20}$ths of an inch.

The coxæ of the two pairs of gnathopoda and the two anterior pairs of pereiopoda are nearly as broad as deep, and nearly as deep as their respective segments of the body; those of the three posterior pairs of pereiopoda are much shorter than the preceding.

The first pair of gnathopoda are smaller than the second; the dactylos is short, stout, and curved; the propodos longer than broad, the palm slightly receding and convex; the carpus is much shorter

than the propodos, and is but slightly produced inferiorly. The second pair of gnathopoda are nearly six times as large as the first; the propodos is more rotund in general form; the palm is convex, and fringed with a row of solitary short hairs; and a protuberance marks the point where the extremity of the dactylos bites, which, when closed, conforms to the palm; the carpus is not produced inferiorly. The pereiopoda are furnished with short, stiff, spine-like hairs.

The animal differs but little in appearance from *Orchestia*, and, no doubt, has often been mistaken for it, from which, however, it is readily detected by its size and the appreciable length of the upper antennæ.

The microscopic structure of the crust shows also a distinction between the two, although not to any very great extent. The ⊤ markings appear more numerous, and somewhat different in shape. The whole structure is covered with a granular pavement; but no trace of the original cell-formation is apparent.

The hairs, though formed upon the same general type as in *Orchestia*, yet exhibit some peculiarities of form: their apex is sharper and slightly curved; and the lateral appendage has a peculiar baccate appearance.

Taken along the line of coast near ordinary tide-mark, probably all round our shores: more abundant than *Orchestia*.

Hab. Penzance (*Mr. G. Barlee* and *Mr. W. Webster*); Moray Frith (*Rev. G. Gordon*); Falmouth and Tenby (*Mr. W. Webster*); Plymouth (*C. S. B.*); Christiansund (*Rathke*).

7. **Allorchestes Sayi**, n. s. (Plate VI. fig. 5.) B.M.

Male.—Superior antennæ..... Inferior antennæ not half as long as the animal; the peduncle is twice as long as the flagellum; the penultimate articulation is longer than the ultimate. First pair of gnathopoda.....; second largely developed, ovate, tapering towards the dactylos; palm oblique, and furnished with two blunt denticular processes. The three posterior pairs of pereiopoda robust, scabrous; dactylos furnished upon the inside, near the middle, with a small hair.

Length $\frac{7}{20}$ths of an inch.

The figure, together with the above description, is taken from one of two or three unnamed damaged specimens in the Collection of the British Museum labelled "Say," being some that were presented by Professor Say.

Hab. North America (*Say*).

8. **Allorchestes microphthalmus**, n. s. (Plate VI. fig. 6.) B.M.

Gammarus microphthalmus, *MS. Brit. Mus.*

Eyes minute, round; they appear to be only small specks; but

nearer observation shows that the black spot is confined to the centre, the outer portion being white, and therefore lost to casual inspection. The superior antennæ are not perfect in our specimen to their extreme length; but we presume them to have reached a little beyond the peduncle of the inferior. The peduncle of the inferior antennæ scarcely passes that of the superior; the flagellum is very long and slender, nearly the length of the entire animal, and five or six times as long as the superior. The anterior gnathopoda have the propodos scarcely wider than the carpus; the palm oblique, convex, and ill-defined; dactylos short; carpus short, and scarcely at all inferiorly produced. The second pair of gnathopoda are about four times as large as the first; the propodos is broadly ovate; the palm is oblique and almost straight, but not well-defined—*i. e.* there is no marked distinction between the palm and the continuous portion of the inferior margin of the propodos; it is fringed with a few equidistant solitary cilia. The four anterior coxæ are not so deep as their respective segments; that of the fifth is a little shorter. The basos of each of the three posterior pairs of pereiopoda is round and smooth.

Length $\frac{4}{20}$ths of an inch.

Hab. Italy.

9. **Allorchestes Inca**, n. s. (Plate VI. fig. 7.) B.M.

Eyes obliquely oval. Superior antennæ longer than the peduncle of the inferior. Inferior antennæ not half the length of the animal; the peduncle about half the length of the antennæ. The first pair of gnathopoda having the upper and lower margins of the propodos nearly parallel and twice as long as broad, not wider than the carpus, and about three times as long. The second pair of gnathopoda having a largely developed propodos, very broad near the carpus and tapering to a point towards the dactylos; the palm occupies the entire length of the inferior margin; it is slightly waved throughout its extent, and an elevation of more importance exists near the base of the dactylos; it is fringed with equidistant solitary hairs throughout its length; the dactylos has a slight protuberance near the middle of the inner margin, which corresponds to the depression posterior to the lobe on the margin of the palm. The rest of the animal is very similar to *A. Nilssonii*.

Length about $\frac{7}{20}$ths of an inch.

This species, for which we are indebted to Prof. Kinahan, much resembles *A. hirtipalma*, but differs in the length of the superior antennæ, which, in *A. hirtipalma*, are nearly as long as the inferior,

and in the form of the palm of the second pair of gnathopoda, which in *A. hirtipalma* is a little "depressed." The distinction may be one of sex. The habitat of both is the same.

Hab. Peru (*Prof. Kinahan*).

10. Allorchestes imbricatus. (Plate VI. fig. 8.) B.M.

Allorchestes imbricatus, *Spence Bate, Ann. Nat. Hist.* Feb. 1857.

The dorsal median line slightly carinated and imbricated. Eyes small and round. Superior antennæ having the peduncle fully half the length of the whole organ. Inferior antennæ, in which the peduncle is scarcely a third of the length of the flagellum, more than as long again as the superior. First pair of gnathopoda having the propodos more than twice as long as broad; the carpus but slightly produced inferiorly. Second pair of gnathopoda large and powerfully formed, having the propodos somewhat broader at the base than at the palm; the palm is slightly oblique, and a groove receives the extremity of the dactylos. The coxæ are large, but scarcely so deep as the segments of the body. The coxæ of the third pair of pereiopoda are rather more than half as long as the preceding, and are equally bilobed. The basos of each of the three posterior pairs of pereiopoda is oval. The posterior pleopoda are short, stout, and formed for leaping.

The animal is longer in shape and more compressed than usual in the family. The dorsal ridge is elevated into a slight carina, mostly developed towards the posterior limit of each segment; this gives the animal, when viewed laterally, an imbricated aspect. It is from this that the specific name is taken, and by which it can be readily recognized from other existing species.

A. imbricatus appears to be rather a local species. The first specimens were obtained from Penzance, between tide-marks, by my valued friend and correspondent Mr. George Barlee. I have taken them, in company with Prof. Kinahan, on the Plymouth Breakwater, in the small pools left in holes worn by the wash of the sea in the face of that stupendous work; they were the only species of Amphipoda that we found on it.

The colour of the specimens was a mottled bluish grey; a few were almost black.

The length of the longest specimen was about $\frac{7}{10}$ths of an inch.

11. Allorchestes Gaimardii. (Plate VI. fig. 9.) B.M.

Amphitoë Gaimardii, *Edw. Hist. des Crust.* iii. 37.
Allorchestes compressa, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 205.
Allorchestes Gaimardii?, *Dana, U. S. Explor. Exped.* p. 884, pl. 60. f. 1.

Eyes oval. Superior antennæ three-fourths as long as the inferior. Inferior antennæ about half as long as the animal: the peduncle

twice as long as the flagellum, one-half of which is fused into one articulation, and resembles an extra articulation attached to the peduncle. First pair of gnathopoda having the propodos and carpus equally short and stout; the palm but slightly receding, and nearly one-third longer than the dactylos, which is robust and curved; it impinges at the apex against four short, strong, small, blunt spines; these are situated laterally instead of upon the palm. Two or three small hairs upon this pair of limbs appear to be all that are on the animal; all the other parts are perfectly clean. Second pair of gnathopoda having the propodos much larger than in the first; it is ovate, long, and tapering towards the extremity, the palm being two-thirds the length of the inferior margin.

Length of the animal $\frac{1}{2}\frac{5}{0}$ths of an inch.

The specimen in the British Museum was brought from South Australia. M. Milne-Edwards gives New Holland as the habitat of his specimen; and Prof. Dana obtained his from the shores of Illawarra, New South Wales.

Dana has divided his genus *Allorchestes* into two divisions, in order to separate this species from the rest, in consequence of the shortness of the flagellum of the inferior antennæ. It is quite evident that that distinguished naturalist has mistaken the fused portion of the flagellum for a portion of the peduncle; hence his desire to separate *A. Gaimardii* from the rest of the genus,—an arrangement that appears to be neither natural nor convenient.

12. **Allorchestes Pereiri.** (Plate VI. fig. 10.) B.M.

Orchestia Pereiri, *Lucas, Expéd. dans l'Algérie.*
Orchestia Bonelliana, *White, Cat. Crust. B.M.* 1847.
Amphitoë aquilina, *Costa, Rend. della Reale Accad. Napoli*, p. 174, 1853.

Eyes round and small. Superior antennæ rather more than half the length of the inferior. Inferior antennæ not one-third the length of the animal; the flagellum of each pair of antennæ longer than the peduncle. Propodos of the first pair of gnathopoda longer than the carpus, quadrate, somewhat narrower at the base than at the palm, which is slightly oblique and fringed with cilia; carpus inferiorly produced to a small extent. Propodos of the second pair of gnathopoda well developed, ovate, long, and tapering; the palm occupying nearly the entire length of the inferior margin. Third pair of pereiopoda shorter than the two posterior.

Length $\frac{1}{2}\frac{2}{0}$ths of an inch.

The specimens in the British Museum were brought from Genoa by the Marquis of Spinola; but although found upon the northern coasts of the Mediterranean, I believe them to be of the same species as that which M. Lucas found upon the coast of Algeria. There are

some slight differences between his figure and that given in this work, but not more than can be accounted for as arising from discrepancies between artists, for which some allowance should always be made, particularly where the naturalist is obliged to trust to the skill of those who may not be acquainted with the subject.

13. Allorchestes verticillatus. (Plate VII. fig. 1.)

Allorchestes verticillata, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 205; *U. S. Explor. Exped.* p. 886, pl. 60, mas. f. 2, fem. ? f. 3.

"*Male*.—Coxæ of moderate size. Inferior antennæ nearly twice longer than superior, about one-third as long as the body; base short, last two joints of base subequal; flagellum about twice longer than base, fourteen-jointed, joints slightly oblong; setæ densely verticillate, short (not longer than breadth of joints). Superior antennæ nearly naked. First pair of gnathopoda quite small; propodos oblong, hardly narrower at base, oblique at apex; carpus not produced below. Second pair of gnathopoda large, subovate; palm along inferior side nearly straight, pubescent; dactylos long; carpus not produced downwards between hand and fourth joint. Third, fourth, and fifth pairs of pereiopoda subequal, short; setæ few, stout, short, not longer than diameter of joint; upper margin of propodos naked. Carpus with a seta below.

"*Female*?—First pair of gnathopoda having the propodos in form and size like the male. Second pair of gnathopoda having the propodos a little larger than the first; it is oblong, rather broad, upper and under sides nearly parallel; upper very slightly arcuate, and one-third longer; lower with three or four tufts of longish setæ; apex truncate, a little oblique, forming a nearly transverse palm, and somewhat hairy; dactylos not longer than the palm, and not half as long as the propodos; carpus broader than the meros; meros nearly rectangular. Flagellum of the superior antennæ ten- to twelve-jointed; of the inferior antennæ about fourteen-jointed.

"Length four lines.

"*Hab.* Along the shores near Valparaiso."—*Dana*.

14. Allorchestes hirtipalma. (Plate VII. fig. 2.)

Allorchestes hirtipalma, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 205; *U.S. Explor. Exped.* p. 888, pl. 60. f. 4.

"Superior antennæ very slender, a little shorter than inferior; base very short. Inferior pair somewhat shorter than half the body; flagellum more than twice as long as base, lower side densely short, villose, joints not oblong. Propodos of first pair of gnathopoda oblong, smaller at base, finely ciliate below, obliquely truncate at

apex. Propodos of second pair large, subovate, flattened below, and villous; palm a little depressed, nearly straight; finger rather long. Last four pairs of pereiopoda subequal; setæ few and very minute, not as long as half the diameter of the sixth joint; posterior apices of fourth and fifth joints prolonged and setulose.

"Length about $\frac{8}{20}$ths of an inch.

"*Hab.* Sea-shores near Valparaiso, and also those of the island of San Lorenzo, Peru."—*Dana.*

15. **Allorchestes gracilis.** (Plate VII. fig. 3.)

Allorchestes gracilis, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 205; *U.S. Explor. Exped.* p. 889, pl. 60. f. 5.

"Antennæ very slender; superior pair twice shorter than inferior, and a little longer than base of inferior; inferior hardly half as long as the body; flagellum much longer than base, joints oblong; setæ very short, few (not longer than breadth of joints). Propodos of first pair of gnathopoda but little oblong, narrowest at base, somewhat obliquely truncate at apex; palm straight, short, hirsute; carpus triangular, below produced and acuminate. Propodos of second pair large, suboval; palm nearly straight, a few minute tufts of hairs; third joint of this pair short and acutely prolonged behind; the fifth or carpus not produced below in a process between the propodos and fourth joint. Fourth pair of pereiopoda a little shorter than seventh, the setæ few and very short.

"Length six to eight lines.

"*Hab.* Tongatabu, Pacific Ocean; in shallow water among delicate sea-weeds."—*Dana.*

16. **Allorchestes brevicornis.** (Plate VII. fig. 4.)

Allorchestes brevicornis, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 206; *U.S. Explor. Exped.* p. 893, pl. 60. f. 8.

"Antennæ quite short; the superior not one-fourth as long as the body, and the inferior not one-third; inferior pair having the base quite short; flagellum longer than base, joints very slightly oblong; setæ very short, dense, verticillate. Propodos of first pair of gnathopoda quite small, a little oblong, subrectangular, pubescent below; apex transversely truncate, slightly excavate, lower apex acute and a little prolonged. Propodos of second pair narrow ovate, rather small, apex narrow, with a few tufts of short setæ below; finger short, not half as long as propodos, nearly longitudinal; whole palm depressed, straight; carpus very short, transverse, produced below. Four posterior pairs of pereiopoda equal, setæ minute.

"Length five lines.

"*Hab.* Along shores of the Bay of Islands, New Zealand."—*Dana.*

17. **Allorchestes humilis.** (Plate VII. fig. 5.)

Allorchestes humilis, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 206; *U.S. Explor. Exped.* p. 890, pl. 60. f. 6.

"*Female*?—Superior antennæ a little shorter than the inferior; flagellum six- to eight-jointed. Inferior pair about one-third as long as body; flagellum nine- to ten-jointed, joints a little oblong, setæ all very short. Propodos of first pair of gnathopoda small, oblong, a little smaller at base, oblique at apex. Propodos of second pair of same form, and not twice as long, inferior margin slightly emarginate; palm oblique, transverse, hirsute; dactylos short. Last four feet nearly equal, fifth pair a little shorter; setæ few, very short; first joint nearly orbicular; posterior margin slightly crenulate. Maxillipeds with the penult joint narrow.

"Length four lines.

"*Hab.* From shallow pools of water along shores of Port Jackson, New South Wales. Collected December 25th, 1839."—*Dana.*

18. **Allorchestes australis.** (Plate VII. fig. 6.)

Allorchestes australis, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 206; *U. S. Explor. Exped.* p. 892, pl. 60. f. 7.

"Superior antennæ a little shorter than inferior; flagellum longer than base, about fourteen-jointed, joints towards base transverse. Inferior antennæ less than half the body in length; flagellum rather longer than base, twelve- to fourteen-jointed, joints mostly oblong, setæ nearly obsolete. Propodos of first pair of gnathopoda quite small, but little oblong, much narrower at base than at apex, nearly direct truncate at apex; dactylos not longer than breadth of propodos. Propodos of second pair of gnathopoda large, subovate, palm depressed, posterior angle with a few minute setæ; carpus produced into a narrow process between the propodos and fourth joint. Three posterior pairs of pereiopoda gradually increasing in length, third joint quite broad, setæ very short.

"Length six lines.

"*Hab.* Shores of Illawarra, New South Wales."—*Dana.*

19. **Allorchestes orientalis.** (Plate VII. fig. 7.)

Allorchestes orientalis, *Dana, U. S. Explor. Exped.* p. 896, pl. 61. f. 2.

"Superior antennæ a little shorter than inferior; flagellum moniliform, seven-jointed, longer than base. Inferior antennæ half as long as body, last two basal joints equal; flagellum nearly twice as long as base, moniliform, fourteen-jointed, joints oblong, setæ short.

Propodos of first pair of gnathopoda quite small, oval. Propodos of second pair ovate; palm a little depressed, and bearing a few short setæ; dactylos long; carpus not produced below between propodos and fourth joint. Three posterior pairs of pereiopoda gradually increasing in length; setæ few, minute.

"Length three lines.

"*Hab.* Island in the Sooloo Sea, off the harbour of Soung."—*Dana.*

20. **Allorchestes gramineus.** (Plate VII. fig. 8.)

Allorchestes? graminea, *Dana, Proc. Amer. Acad. Sci. Bost.* ii. 208; *U. S. Explor. Exped.* p. 897, pl. 61. f. 3.

"Superior antennæ one-third shorter than inferior; flagellum longer than base, about fourteen-jointed. Inferior antennæ not half as long as body; flagellum moniliform, much longer than base, joints hardly oblong, setæ minute. Eyes reniform. Propodos of first pair of gnathopoda narrow, a little the broadest at middle; dactylos long, stout, folding against under side of propodos. Propodos of second pair quite large, narrow ovate, narrow at apex, lower margin nearly straight, palm not depressed; dactylos long (longer than half the propodos); carpus not produced below between the propodos and the fourth joint. Three posterior pairs of pereiopoda gradually increasing in length (last two pairs nearly equal), almost naked.

"Length six to seven lines.

"*Hab.* Rio Janeiro (January)."—*Dana.*

21. **Allorchestes medius.** (Plate VII. fig. 9.)

Allorchestes media, *Dana, U. S. Explor. Exped.* p. 898, pl. 61. f. 4.

"Coxæ large. Superior antennæ longer than half the inferior; flagellum fourteen-jointed, joints sparingly oblong; setæ partly very short and divaricate, partly close-appressed, and about as long as the joint. Inferior antennæ not half as long as the body; flagellum longer than the base, sixteen-jointed, joints sparingly oblong; setæ numerous and verticillate, except on outer side, which is naked; setæ hardly as long as breadth of joint. First pair of gnathopoda quite small; propodos oblong; margins nearly parallel, below hirsute in part, at apex obliquely truncate; dactylos short. Propodos of second pair quite large, subovate, arcuate above; palm very oblique, transverse, spinulose, ending in an angle below; dactylos a little longer than half the propodos; carpus small, not produced below between the propodos and the fourth joint; fourth joint

triangulate anteriorly and nearly acute. Three posterior pairs of perciopoda subequal, increasing gradually in length; setæ few; one stout, one as long as diameter of joint on propodos of third pair, and one or two such on same joint of last two pairs.

"Length five to six lines.

"*Hab.* Rio Janeiro, dredged in the harbour; also Cape Verdes, Porto Praya."—*Dana.*

22. Allorchestes Pugettensis. (Plate VII. fig. 10.)

Allorchestes Pugettensis, *Dana, U.S. Explor. Exped.* p. 901, pl. 61. f. 6. *Stimpson, Journ. Nat. Hist. Bost.* vol. vi.

"Coxæ moderately large. Superior antennæ half shorter than inferior, slightly longer than base of inferior, and much more slender: flagellum fifteen-jointed, setæ nearly obsolete. Inferior antennæ not as long as half the body, flagellum slightly longer than base, joints a little oblong, setæ very minute. Propodos of first pair of gnathopoda ovate, arcuate above and below; palm very oblique, and not excavate. Propodos of second pair very stout, subovate, truncate below, so that the palm is straight, or nearly so, and slightly excavate; dactylos long, and reaching to the angle terminating the palm; carpus not produced below between propodos and fourth joint; fourth joint triangular and subacute anteriorly. Fourth and fifth pairs of perciopoda subequal; setæ few and very short.

"Length of body nine or ten lines.

"*Hab.* Puget's Sound, North-west America."—*Dana.*

23. Allorchestes Hawaiensis. (Plate VIII. fig. 1.)

Allorchestes Hawaiensis, *Dana, U.S. Explor. Exped.* p. 900, pl. 61. f. 5.

"Coxæ of moderate size. Antennæ of superior pair much more slender than those of second, nearly one-fourth the length of the body; flagellum fourteen-jointed, joints long and slender; setæ about as long as breadth of joints. Inferior pair with the base twice as long as base of superior; joints of flagellum oblong; setæ few, and half as long as breadth of joints. Propodos of first pair of gnathopoda very small, broad, subovate, above nearly straight, below arcuate; palm oblique and nearly longitudinal; carpus rounded below. Propodos of second pair of gnathopoda stout, ovate, arcuate above and below; palm very oblique, so as to be nearly longitudinal, sparingly setulose; carpus not produced below between propodos and fourth joint. Two posterior pairs of

perciopoda subequal; setæ few, minute, not longer than half the breadth of the joint.

"Length four to five lines.

"*Hab.* Island of Maui, Hawaiian Group."—*Dana.*

24. Allorchestes littoralis. (Plate VIII. fig. 2.) B.M.

Allorchestes littoralis, *Stimpson, Marine Invert. of Grand Manan*, p. 49, pl. 3. f. 36.

Male.—Eyes round, moderately large. Superior antennæ about two-thirds as long as the inferior. Inferior antennæ scarcely one-fourth the length of the animal; peduncle as long as the flagellum, the latter spinous. Second pair of gnathopoda having the propodos broad ovate; palm slightly oblique, grooved towards the inferior angle to receive the dactylos, and fringed with two rows of short obtuse hairs, each being armed with a lateral cilium.

Length about $\frac{8}{20}$ths of an inch.

The colour, according to Stimpson, varies from bright green, through the various shades of olive, to brown.

Hab. It is abundant on the shores from Massachusetts Bay to Grand Manan, especially where the *Fucus nodosus* and *F. vesiculosus* flourish. I am indebted for a specimen of this species to its author.

25. Allorchestes seminudus.

Allorchestes seminuda, *Stimpson, Proc. Cal. Acad. Nat. Sc.* i. 90; *Journ. Bost. Soc. Nat. Hist.* vol. vi.

"Body somewhat compressed. Eyes oval. Superior antennæ three-fifths as long as the inferior ones; inferior antennæ two-fifths as long as the body; on both pairs of antennæ there are a few short setæ at the extremity of each articulation. Propodos of first pair of gnathopoda small, palm oblique, almost transverse; dactylos of moderate size; carpus produced at its inferior angle into a sharp projection. Propodos of the second pair rather large, oblong ovate, deeply excavated below for the reception of the point of the dactylos, which is more than half as long as the hand. Colour pale green; antennæ red.

"Length $\frac{1}{20}$ths of an inch."

Mr. Stimpson, from whom we have adopted the above description, says that it is closely allied to *A. Pugettensis*, but is smaller and more compressed, the superior antennæ are more setose, and the first pair of gnathopoda are different in shape, the palm being much less oblique.

It is common at St. Francisco, living among barnacles and sea-weed, on stones, and the piles of wharfs, in the littoral zone.

The specimen is preserved in the Museum of the North Pacific Expedition.

26. Allorchestes plumulosus.

Allorchestes plumulosus, *Stimpson, Journ. Bost. Soc. Nat. Hist.* vol. vi.

"In this species the inferior antennæ are about one-third as long as the body, and thickly tufted with plumose hairs along the inferior edge,—the terminal joint of the peduncle, and all the joints of the articulate flagellum, except those near the extremity, being provided below with plume-like bundles of branching setæ, as well as the usual simple ones above and on the sides. The superior antennæ have only a few simple setæ, which are, however, of considerable length. The propodos of the second pair of gnathopoda is oblong, two-thirds as broad as long, and rather quadrate than ovate, with the palm curved, less excavated, and with a much less prominent projection at the extremity of the dactylos than in *A. seminudus*; the dactylos is scarcely half as long as the propodos. In other characters this species has considerable resemblance to *A. seminudus*. Colour greenish.

"Length $\frac{5}{10}$ths of an inch.

"It is common on gravelly shores in the littoral zone, near the mouth of San Francisco Bay.

"Mus. North Pacific Expedition."—*Stimpson.*

27. Allorchestes angustus.

Allorchestes angustus, *Dana, Proc. Acad. Nat. Sc. Philad.* 1854, vii. 177; *Stimpson, Journ. Bost. Soc. Nat. Hist.* vol. vi.

Stimpson says, "This species may be recognized by its high coxæ."

Hab. California (*Le Conte*).

Mus. of Prof. Dana.

28. Allorchestes rubricornis.

Allorchestes rubricornis, *Stimpson, Exped. China and Japan, Proc. Acad. Nat. Sci. Amer.* 1855.

"Smooth, compressed. Eyes suboval, black, widening below. Inferior antennæ two-thirds the length of the body, with 25-articulate flagella, articulations nearly as broad as long, with a few short hairs. Superior antennæ two-thirds as long as the inferior ones, flagella 13-articulate. Large propodos of male nearly smooth below. Gnathopoda of female slender, with dactyla one-fourth their length. Posterior pair of pleopoda conical. Colour pale olive; antennæ always red.

"Length $\frac{2}{3}$rds of an inch.

"*Hab.* Ousima, Boninsima."—*Stimpson.*

29. Allorchestes penicillatus.

Allorchestes penicillata, *Stimpson, Exped. Japan, Proc. Acad. Nat. Sci. Amer.* 1855.

"Penultimate and first four joints of the inferior antennæ furnished with spreading pencils or plumes of long setæ. Antepenultimate pair of pleopoda with a long curved spine, ending near the bases of the rami, and nearly equalling them in length. Coxæ, legs, &c., of medium size, as in *A. rubricornis*. Colour greenish.

"Length $\frac{1}{4}$ inch.

"*Hab.* Ousima."—*Stimpson.*

30. Allorchestes Japonicus.

Allorchestes Japonica, *Stimpson, Exped. Japan, Proc. Acad. Nat. Sci. Amer.* 1855.

"Smooth posteriorly. Inferior antennæ stout, one-fourth as long as the body, and twice as long as the superior ones: flagella of both with twelve oblong articulations, with extremely short numerous setæ. Cephalon rather small; eyes large, black, very broad oval, closely approaching each other above. Second pair of gnathopoda in male having the propodos notched below; posterior pair of pleopoda very minute; a prominent contraction of the fourth segment of the pleon above. Colour olive; coxæ and legs shaded red.

"Length $\frac{1}{2}$ inch.

"*Hab.* Japan."—*Stimpson.*

31. Allorchestes Babicus.

Amphitoë Babicus, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, p. 173, 1853.

"Having the antennæ very short; superior rather the shorter; flagellum a little longer than the peduncle. Second pair of gnathopoda having the propodos dilated, upper margin strongly arcuate; palm oblique, and minutely denticulated and ciliated in the male, smaller and compressed inferiorly in the female. Pereiopoda minutely spinulose.

"Length $3\frac{1}{2}$ lines.

"*Hab.* Coast of Naples."—*Costa.*

Costa considers this to be allied to *A. Prevostii* of Edwards, which differs from *A. Nilssonii* of Rathke only in having the telson double.

32. Allorchestes Gazella.

Amphitoë Gazella, *Costa, Rend. della Reale Accad. delle Sc. di Napoli*, p. 174.

"Having the antennæ very short; the superior pair a little longer

than the peduncle of the inferior. Second pair of gnathopoda strongly dilated; palm oblique, serrulate, and spinulose in the male, but very like the first pair in the female.

"Length $3\frac{1}{2}$ lines.

"*Hab.* Coast of Naples."—*Costa.*

Costa considers this closely allied to the preceding species.

Doubtful species.

33. Allorchestes punctatus.

Enone punctata, *Risso, Europe Mérid.* p. 97.

This species should probably come here; but Risso's description is scarcely sufficient to enable me to determine. It may be the young of *Amphitoë rubra*.

"*Enone* corpore hyalino, lutescente, lateribus rubro punctatis; chelis minimis, pedibus secundo pari longissimis, apice ovatis, acutis.

"Length 0·015; breadth 0·004 inch.

"*Hab.* Coasts of the Mediterranean in the spring."—*Risso.*

6. NICEA.

Nicea, *Nicolet, Gay's Chili*, vol. iii. p. 237, 1849.
Galanthis, *Spence Bate, Ann. Nat. Hist.* Feb. 1857; *Brit. Assoc. Report*, 1855.

Superior and inferior antennæ subequal, scarcely longer than the cephalon. The rest of the animal generally resembling *Allorchestes*, except the telson, which is deeply cleft (or double?).

1. Nicea Lubbockiana. (Plate VIII. fig. 3.) B.M.

Galanthis Lubbockiana, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 164.

Eyes rather large and perfectly round. Superior antennæ scarcely longer than the cephalon; first articulation of the peduncle largest, second slightly smaller, third still more so; the flagellum likewise decreases in a regular degree, so that the distinction between it and the peduncle is inappreciable. Inferior antennæ not longer than the superior. Mandibles much longer than deep, and furnished with a secondary incisive plate; a small tubercle occupies the position of the appendage. The maxillipeds have a squamose plate arising from the basos and the ischium, both of

which terminate in sharp spines. First pair of gnathopoda small, having the propodos not broader than the carpus, but twice as long as broad; palm oblique and minutely ciliated; a slight projection or small tooth antagonizes against the apex of the dactylos; the carpus is slightly produced inferiorly. Second pair of gnathopoda somewhat larger than the preceding and like them in form. Coxæ of the four anterior pairs of legs nearly as deep as the respective segments of the body of the animal. Coxæ of the third pair of pereiopoda only half as long as the preceding. Pereiopoda short, robust, and terminating in a sharp, curved, powerful dactylos, which antagonizes, in closing upon the propodos, against two short strong hairs curved at the apex and furnished down one side with a series of flat sharp teeth. Last three pairs of pleopoda very short and stout, their terminal rami being shorter than their respective bases. Telson small, and cleft from the apex to the base.

Length $\frac{3}{20}$ths of an inch.

All the segments of the animal are very similar in length—a circumstance that enables it to roll itself into a more circular form than the generality of Amphipods. This affords a diagnosis by which the animal may be readily detected. It is generally free from hairs; a few short ones, however, exist, of a somewhat pyriform shape, with the apex divided into two equal parts. The integument, under the microscope, shows the presence of the ⊤-mark, somewhat modified from *Talitrus*, &c. The whole structure is also granulated all over, and interspersed with short hairs.

Hab. Falmouth (*Mr. W. Webster*); Penzance (*Mr. Harris* and *Mr. G. Barlee*); Northumberland (*Mr. J. Alder*).

I have named this species after Mr. John Lubbock, whose name is so intimately associated with the study of the Crustacea.

2. **Nicea Lucasii.** (Plate I. *a*. fig. 7.)

Nicea Lucasii, *Nicolet, Gay's Chili*, vol. iii. p. 237.

I have seen no specimen of this species. It appears to differ from the British form, so far as I can judge from the figure and description in Gay's work, in the shortness of the propodos in both pairs of gnathopoda, and in the singularly tuberculated appearance of the maxillipeds.

Dana is inclined to think it synonymous with his genus *Allorchestes*; but its general form is so similar to the preceding species, that I have no doubt they belong to the same.

Length $\frac{9}{20}$ths of an inch.

Hab. Coast of Chili (*Gay*).

3. Nicea Prevostii.

Amphitoë Prevostii, *Edwards, Ann. des Sc. Nat.* t. xx. p. 378, and ser. 2. t. iii. pl. 14. fig. 11; *Hist. des Crust.* t. iii. p. 36.

"Cephalon without a rostrum. Superior antennæ very short, scarcely passing the peduncle of the inferior; inferior antennæ also short, having about fourteen joints to the flagellum. Eyes oval. First pair of gnathopoda having the propodos ovate, not dentated, and not longer than the carpus. Second pair of gnathopoda having the propodos very large; palm nearly straight, and armed with spines; in the female the propodos is not so largely developed; dactylos very large, and, when closed, forming with the propodos an oval. The last two segments of the pleon are rudimentary; the pleopoda which they support are shorter than those of the fourth segment. Telson two little, short and obtuse stylets.

"*Hab.* The Gulf of Naples."—*Milne-Edwards.*

Upon examining the typical specimen in the Museum of the Jardin des Plantes, I came to the conclusion that it was synonymous with *Nilssonii* of Rathke, but unfortunately omitted to observe the character of the telson. Edwards states it to consist of two little, short stylets,—a circumstance which compels me to arrange it under *Nicea* rather than with *Allorchestes*, with which in all other respects it appears to be identical.

Tribe Natatoria.

The superior antennæ never rudimentary. The posterior pair of pleopoda reaching to the extremity of the preceding. The hairs upon the entire animal are generally slight and flexible.

The habits of the animals are aquatic. Their common mode of progression, when in the water, is by swimming or walking; and when accidentally removed from that element, they wriggle along upon their side—a circumstance that has obtained for them the familiar name of "Sea-screws." This tribe, like that of Saltatoria, contains but one family.

Fam. 2. GAMMARIDÆ.

Superior antennæ well developed. The inferior antennæ inserted in a notch at the infero-anterior angle, and not fused with the cephalon. Maxillipeds unguiculate. The coxæ largely developed and squamiform.

This family is made up of several subfamilies, which differ from each other in more or less important points.

Subfamily 1. STEGOCEPHALIDES.

Superior and inferior antennæ subequal. Coxæ of the second pair of gnathopoda and of the first and second pairs of pereiopoda monstrously developed; second pair broader than the preceding. Pereiopoda subequal. Last three pairs of pleopoda styliform. Telson single.

Dana established his subfamily Stegocephalinæ to receive Kröyer's genus *Stegocephalus*; but there are several other genera that evidently fall within this family, the points of their approximation being of greater importance than those in which they differ. The principal feature, and one which is readily appreciable, is the large size of the coxæ of the two anterior pairs of pereiopoda, which are capable of enclosing all the appendages of the animal when rolled together. The genera on the one side approach in character to the Orchestidæ, and on the other to the Lysianassides. They may be arranged thus:—

a. Superior antennæ without an appendage; mandibles without an appendage; posterior pleopoda unibranched.

b. Superior antennæ without an appendage; mandibles with an appendage; posterior pleopoda double-branched.

c. Superior antennæ with a rudimentary appendage; mandibles without an appendage; posterior pleopoda double-branched.

a. *Superior antennæ without an appendage; mandibles without an appendage; posterior pleopoda unibranched.*

1. MONTAGUA.

Leucothoë, *Kröyer* (not *Leach*), *Nat. Tids.* iv. p. 141, (2) i. p. 539. 1845.

Montagua, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis Brit. Amphipoda, Ann. Nat. Hist.* Feb. 1857.

The superior antennæ are as long as the inferior, and not furnished with a secondary appendage. The mandibles are not furnished with an appendage. The maxillipeds are pediform, unguiculate, and without, or with only rudimentary, squamiform plates. The first pair of gnathopoda are small, subchelate, the coxæ not developed into a squamiform plate. The second pair of gnathopoda are larger than the first, and have the coxæ very large, squamiform, deeper than the body, and produced anteriorly, so as to cover the organs of the mouth; the propodos is developed upon the same type as in the first pair. The pereiopoda are subequal; the coxæ of the two anterior pairs are very largely developed, deeper than the body, and produced posteriorly, so as to cover that of the following pair of pereiopoda. The posterior pair of pleopoda

are styliform, unibranched, the ramus biarticulate. The telson is simple and squamiform.

The genus is named after Colonel Montagu, the indefatigable naturalist who discovered the first species of the genus.

1. **Montagua monoculoides.** (PLATE VIII. fig. 4.) B.M.

Montagua monoculoides, *Montagu, Trans. Linn. Soc.* vol. xi. p. 4, pl. 2.
Spence Bate, Brit. Assoc. Report, 1855; *Synop. Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 166, pl. 10. f. 2.
Typhis monoculoides, *White, Cat. of Brit. Crust. in B.M.* 1850.
Gosse, Mar. Zool. p. 140. fig. 252.

Cephalon produced into a minute rostrum. Eyes round. Superior antennæ gradually lessening to the apex of the flagellum. Inferior antennæ stouter than the superior; the peduncle longer and the flagellum shorter than the peduncle of the superior. Mandibles having the incisive edge serrated. Maxillipeds having the propodos longer than the two preceding joints. First pair of gnathopoda having the inferior angle of the carpus and meros not much produced; the inferior margin of the propodos parallel with the upper; palm oblique, short. Second pair of gnathopoda larger than the first, but similar in form, having the palm slightly convex, and armed with two small spines at the inferior angle, where the apex of the dactylos impinges. Perciopoda subequal, each having a sharp, strong, hooked dactylos; the propodos slightly curved, and furnished with two short strong spines upon the lower extremity on the flexible side; the coxæ of the three posterior pairs are small, of the two anterior very large, and, with one similarly developed belonging to the second pair of gnathopoda, form a large lateral shield upon each side, which protects the inferior and posterior appendages of the animal when rolled up. A row of equidistant solitary hairs, placed within the extreme edge, fringes the margin of the two posterior monstrous coxæ. The basos of the antepenultimate pair of perciopoda is not squamiformly developed; the two posterior pairs have the basos squamiformly developed and slightly crenated on the posterior margin. Rami of the penultimate pleopoda unequal. Telson ovate, squamiform, dorsally concave. Length $\frac{3}{20}$ths of an inch.

The colour of this species is pink, with a large blotch of deeper colour upon the centre of the back.

It appears to be not uncommon on our shores; it is a sublittoral species probably all over Europe, being found beneath stones in pools near low-water at spring tides.

The first specimen was discovered by Colonel Montagu on the Devon-

shire coast. I have had specimens sent to me from the following localities:—Falmouth and Tenby, Mr. W. Webster; Penzance, Mr. Harris and Mr. G. Barlee; from the Moray Frith, Rev. G. Gordon; from Skye and the Shetlands, Mr. G. Barlee; Plymouth, Mr. Howard Stewart. In Mr. Thompson's Irish Collection it is recorded as procured from Sligo and Belfast Bay.

One specimen I obtained from the trawlers is marked all over with red spots. The palm on the propodos of the second pair of gnathopoda differs from the normal form in being slightly crenulated; but I could distinguish no consistent feature that warranted a separation from the present species.

2. **Montagua marina.** (Plate VIII. fig. 5.) B.M.

Montagua marina, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. of Brit. Crust. p. 166.

Eyes round, red. Superior antennæ as long as the inferior, with the first two joints of the peduncle subequal, and each longer than the cephalon. Inferior antennæ having the last two joints of the peduncle subequal and very long; flagellum short. Maxillipeds having all the joints subequal. First pair of gnathopoda having the propodos ovate; palm undefined, fringed with obtuse spines, the three posterior being armed with a secondary cilium; carpus slightly produced inferiorly; meros considerably produced anteriorly and inferiorly, the apex fringed with hairs. Second pair of gnathopoda having the propodos tapering; palm straight, occupying nearly the entire length of the inferior margin, fringed with equidistant, fine, solitary cilia, and armed with an obtuse pointed spine furnished with a secondary cilium near the inferior angle; carpus and meros slightly produced inferiorly. All the pereiopoda having the propodos armed with short spines along the flexible margin. Telson obtusely lanceolate.

Length $\frac{3}{20}$ths to $\frac{4}{20}$ths of an inch.

In other respects this species approximates to the preceding. It is pale in colour, being of a pinkish straw, marked with small rosy blotches about the pereion and antennæ.

Specimens have been sent to me from the coast of Northumberland by Mr. Joshua Alder, from Banff by Mr. Edward, and from Macduff by Mr. Gregor; and I have taken it from trawl-refuse brought up near the Eddystone Lighthouse, Plymouth.

A specimen, varying from the type in having the palm on the propodos of the second pair of gnathopoda occupying scarcely more than half of the inferior margin, has been sent to me by my friend Mr. J. Gwynn Jeffreys, having been found by him, on the coast of Piedmont, on the shore. None of the British specimens have been taken in less than 10 fathoms.

3. **Montagua Alderii.** (Plate VIII. fig. 6.) B.M.

Montagua Alderii, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis Brit. Amph., Ann. Nat. Hist.* 1857.
White, Hist. of Brit. Crust. p. 166.

Eyes round, red. Superior antennæ not so long as the inferior. Inferior antennæ having the peduncle as long as the superior antennæ. The first pair of gnathopoda having the meros inferiorly produced, and the carpus not so, while both joints are armed upon the under side with fasciculi of hairs, some simple and others tufted; the propodos having the palm oblique and scarcely defined. Second pair of gnathopoda having the propodos short, a little longer than broad; the palm serrated near the base of the dactylos, and deeply emarginate near the inferior angle, which is produced into a tooth.
Length $\frac{3}{20}$ths of an inch.

In other respects it approximates to *M. marina*. The colour, when alive, is straw striped with rose.

I have received this species from the coast of Northumberland, where it was taken by Mr. Joshua Alder, in compliment to whom I have named it.

4. **Montagua longimana,** n. s. (Plate IX. fig. 1.) B.M.

Superior antennæ shorter than the inferior. Propodos of the second pair of gnathopoda four times as long as broad. Inferior margin parallel with the superior; palm short, oblique, and armed with a tooth at the inferior angle.
Length $\frac{1}{20}$th of an inch.

Hab. Piedmont (*Mr. J. Gwynn Jeffreys*).

5. **Montagua pollexiana.** (Plate IX. fig. 2.) B.M.

Montagua pollexiana, *Spence Bate, Brit. Assoc. Report*, 1857; *Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. of Brit. Crust. p. 167.

Superior antennæ longer than the inferior. The inferior antennæ having the peduncle reaching to the middle of the flagellum of the superior. The maxillipeds having the carpus, propodos, and dactylos of equal length, and longer than the preceding joints. The first pair of gnathopoda having the meros inferiorly produced, and fringed with hairs; the carpus longer than the propodos, and fringed with hairs, but not inferiorly produced; the propodos three times as long as broad; palm short, straight, oblique. The second pair of gnathopoda having the carpus shorter than the propodos; the propodos as long again as broad; palm advanced, deeply notched just inside the inferior angle, which is produced

into a tooth, internally concave. Perciopoda having the dactylos crenulated upon the flexible side, and terminating in a curved sharp point. The penultimate pair of pleopoda have the rami nearly equal in length. Telson lanceolate.

Length $\frac{5}{20}$ths of an inch.

I received this species from my kind friend Mr. George Barlee, who took it with the dredge at St. Ives, on the north coast of Cornwall, as well as in the Shetlands.

6. **Montagua glacialis.** (Plate IX. fig. 3.)

Leucothoë glacialis, *Kröyer, Nat. Tids.* iv. p. 141, pl. 6. f. 3 *a*; *Voy. en Scand.* pl. 22. f. 3.

Eyes round. Superior antennæ as long as the inferior. Inferior antennæ having the peduncle not longer than the peduncle of the superior. First pair of gnathopoda having the carpus broader than the propodos, and not inferiorly produced; propodos broader at the palm than near the carpus; palm not oblique; inferior angle broadly rounded; dactylos longer than the palm. Second pair of gnathopoda having the propodos narrow; the palm extremely oblique, almost parallel with the superior margin, curved at the inferior angle, with a sharp denticle: a small denticle exists on the palm near the base of the dactylos. Telson rounded.

The above description is taken from Kröyer's figure, which I have also copied, not having seen a specimen of the species.

Hab. Greenland?

7. **Montagua clypeata.** (Plate IX. fig. 4.)

Leucothoë clypeata, *Kröyer, Nat. Tids.* iv. p. 141, pl. 6. f. 2 *a*, (2) i. p. 539, 1845; *Voy. en Scand.* pl. 22. f. 2 *a*.
Liljeborg in Ofvers. af Kongl. Vetensk. Forhandl. 1851.

Eyes small. Superior antennæ longer than the inferior. Inferior antennæ having the peduncle considerably longer than the peduncle of the superior. First pair of gnathopoda having the meros produced inferiorly, terminating obtusely, and ciliated; the carpus longer than the propodos, and not produced inferiorly, ciliated: propodos very long, and ciliated superiorly and inferiorly towards the extremity; palm inappreciable; dactylos very short. Second pair of gnathopoda having the propodos quadrate, a little broader at the palm than posteriorly; palm slightly convex and ciliated, armed at the inferior angle with a strong tooth.

I have not seen any specimen of this species; the description is therefore dependent upon the accuracy of M. Kröyer's drawing, which is also repeated.

Hab. Coast of Norway (*Liljeborg*).

8. Montagua Guerinii. (Plate IX. fig. 5.)

Female.—Eyes round. Superior antennæ as long as the inferior; the peduncle of the inferior not longer than the peduncle of the superior. First pair of gnathopoda as large as the second, and of the same form, ovate; palm not defined; inferior margin ciliated, and furnished with two small teeth close together at the base of the dactylos; dactylos curved, long, reaching to the posterior extremity of the inferior margin; the carpus and meros are not produced inferiorly.

Hab. Madagascar (*Guérin-Méneville*).
Collection of M. Guérin-Méneville.

I am indebted for this species to M. Guérin-Méneville, having copied it from an unpublished drawing in his collection, and have associated it with his name. The animal is figured rolled up: in this position the coxæ of the second pair of gnathopoda may cover those of the first, without their being diminutive. Should this be the case, it will probably belong to the genus *Stenothoë*. To the female of *S. validus* it bears a strong resemblance; in fact it only appears to differ in the large size of the first pair of gnathopoda, and the shortness of the peduncle of the inferior pair of antennæ.

2. DANAIA.

Danaia, *Spence Bate, Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.

Antennæ simple, subequal. Mandibles without an appendage. Maxillipeds pediform. First pair of gnathopoda simple; the coxæ not largely developed. Second pair of gnathopoda subchelate; coxæ largely developed. First and second pairs of pereiopoda having the coxæ very large; coxæ of the second excavated, to receive the coxæ of the third pair of pereiopoda. Posterior pair of pleopoda unibranched, the ramus biarticulate. Telson simple.

The genus is named after Professor Dana, to whom science is indebted for a valuable work on Crustacea.

1. Danaia dubia. (Plate X. fig. 1.)

Danaia dubia, *Spence Bate, Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. of Brit. Crust. p. 167.

Cephalon produced into a long straight rostrum; the ocular margin produced into a point nearly as long as the rostrum. Eyes round, small. Superior antennæ longer than the inferior; the peduncle of the inferior longer than the peduncle of the superior. First pair of gnathopoda long, slight, not subchelate, and without a

squamiform coxa. Second pair of gnathopoda having the coxa very deep and pectinated along the inferior margin; the carpus produced inferiorly; the propodos narrower near the carpal articulation than at the palm, which is slightly oblique, convex, and fringed with hairs, inferior margin nearly parallel with the superior, superior margin arcuate. The first pair of pereiopoda long, slender, having the coxa very deep, the inferior margin pectinated. The second pair of pereiopoda have the coxa very large, the inferior edge fringed with five or six equidistant solitary cilia situated above the margin. The third pair of pereiopoda have the coxa about half as deep as the preceding; the basos squamiformly developed, and similar in form and length to the two posterior pairs. The three anterior segments of the pleon are dorsally, but not importantly, produced posteriorly. The penultimate and antepenultimate pairs of pleopoda have each their rami unequal. The posterior pair of pleopoda are shorter than the preceding.

This species was taken from some trawl-refuse brought from near the Eddystone Lighthouse. I have selected the specific name because, having seen but one specimen, I am in doubt as to the correctness of some of the minuter details. Unfortunately the animal of this very pretty species has not been preserved.

3. STENOTHOË.

Stenothoë, *Dana, U.S. Explor. Exped.* p. 923.

Antennæ simple. Maxillipeds pediform, having a rudimentary squamiform process upon the basos only. The coxæ of the first pair of gnathopoda, as well as the coxæ of the three succeeding pairs of appendages, largely developed. The basos of the antepenultimate pair of pereiopoda squamiformly developed, as well as of the two posterior pairs, all of which are subequal. First pair of gnathopoda small, the second very large. Posterior pair of pleopoda unibranched, the ramus biarticulate. Telson squamiform.

This genus was founded by Dana to receive a species which he obtained at Rio Janeiro. It appears to be the representative, upon the American shores, of our genus *Montagua*, from which it differs in no very great degree.

1. Stenothoë validus. (Plate IX. fig. 6.)

Stenothoë validus, *Dana, U.S. Explor. Exped.* p. 924. pl. 63. f. 1.

"*Male.*—Coxæ very large, fifth quite small. Eyes small and round. The four antennæ subequal; base of inferior pair longer than

flagellum, and nearly twice as long as base of superior pair; joints of flagellum oblong, nearly naked. First pair of gnathopoda furnished with a propodos, which is oblong, arcuate above, and rather more so below; the palm nearly longitudinal, and not excavate. The propodos of second pair of very unusual magnitude, oblong; margins nearly parallel; an obtuse tooth at the lower apex; dactylos long and stout. Third, fourth, and fifth pairs of pereiopoda subequal, the third smallest; basos broad, meros rather broad, the carpus and propodos rather narrow; setæ exceedingly short, not one-fourth as long as breadth of joint.

"*Female*.—Base of second antennæ as long as the flagellum. Second pair of gnathopoda having a stout propodos, which is oblong, arcuate below, with the palm nearly straight, and armed with a small tooth towards the apex.

"Length three to four lines.

"*Hab.* Rio Janeiro."—*Dana*.

2. **Stenothoë clypeatus.** (Plate IX. fig. 7.) B.M.

Stenothoë clypeata, *Stimpson, Mar. Invert. of Grand Manan*, p. 51.

Eyes round. Superior antennæ shorter than the inferior. Inferior antennæ having the peduncle rather longer than the superior antennæ; flagellum not longer than the last articulation of the peduncle. First pair of gnathopoda having the propodos ovate; palm not defined. Second pair of gnathopoda having the superior margin of the propodos arcuate; palm near the base of the dactylos denticulated, not oblique; towards the inferior angle deeply excavate, the concave margin running parallel with the superior margin; the inferior angle of the palm produced into a long sharp tooth, the inferior margin very short.

Length half an inch.

Hab. Grand Manan (*Stimpson*).

The specimen from which the above description is taken was forwarded to me by the author of the species.

b. *Superior antennæ without an appendage; mandibles with an appendage; posterior pleopoda double-branched.*

4. **PLEUSTES.**

Pleustes, *Spence Bate, Ann. Nat. Hist.* ser. 3. vol. i. p. 362, 1858.

The antennæ simple. Coxæ of the two pairs of gnathopoda and the two anterior pairs of pereiopoda very largely developed. Coxa

of the second pair of pereiopoda very deeply excavated upon the upper part of the posterior margin to receive the coxa of the third pair of pereiopoda. The two pairs of gnathopoda subequal and uniform. Mandibles having an articulated appendage. Maxillipeds pediform, having a rudimentary squamiform plate on both the basos and ischium joints. The three posterior pairs of pleopoda alike, styliform, double-branched. Telson simple, squamiform.

This genus differs from *Stenothoë* in having an appendage to the mandibles and two rami to the posterior pair of pleopoda. The species of this genus are generally more or less tuberculated.

1. **Pleustes tuberculatus.** (Plate IX. fig. 8.)

Pleustes tuberculata, *Spence Bate, Ann. & Mag. Nat. Hist.* ser. 3. vol. i. p. 362, 1858.

Cephalon produced into a sharp rostrum. Dorsal surface of the pereion and the anterior part of the pleon carinated; an elevation on each side of the carina on the anterior segments of the pereion, which gradually increases posteriorly until it assumes the form of a tubercle, highest upon the second segment of the pleon, and widest (plate-like longitudinally) upon the third and fourth, and continued smaller to the last: lateral to these, a second row of tubercles, or rather obtuse ridges, commencing with the first, and traversing the margin of all the segments of the pereion and the first two segments of the pleon, in a continuous line. Analogous eminences exist upon the coxæ of the three posterior pairs of pereiopoda. Eyes round. Superior antennæ longer than the inferior. Gnathopoda subequal, ovate; palm extremely oblique, nearly as long as the inferior margin, furnished with two small teeth at the inferior angle. Three posterior pairs of pereiopoda subequal. Posterior pair of pleopoda like the two preceding, but shorter, styliform, naked, double-branched, the rami unequal. Telson quadrate, squamiform.

Length $\frac{17}{20}$ths of an inch.

Hab. Arctic Regions.

The type, on which the genus is founded, and from which this species is figured, is in the Museum of the College of Surgeons, to the Council of which I am indebted for the loan of this and many other specimens. The habitat of the animal is not specified; but I found it in a bottle along with other known Arctic species. I am also indebted for the loan of a specimen to Mr. Albany Hancock, which was dredged in N. lat. 66° 30′, W. long. 68°, by Messrs. Warham and Harrison.

2. **Pleustes panoplus.** (Plate IX. fig. 9.) B.M.

Amphitoë panopla, *Kröyer, Grön. Amf.* p. 42, pl. 2. f. 9.
Edwards, Hist. des Crust. t. iii. p. 41.
Liljeborg in Ofvers. af Kong. Vetensk. Akad. Forhandl. 1851.

This species differs from *P. tuberculata* in the absence of the tubercles, particularly upon the posterior portion of the animal, and in the shortness of the rostrum. It is dorsally carinated, and has a ridge traversing the sides.

Length $\frac{15}{20}$ths of an inch.

Hab. Coast of Greenland (*Kröyer*): North Atlantic (*Barrett*).

c. *Superior antennæ with a rudimentary appendage; mandibles without an appendage; posterior pleopoda double-branched.*

5. STEGOCEPHALUS.

Stegocephalus, *Kröyer, Naturtidsk.* iv. p. 150.

Cephalon short. Antennæ short; superior pair furnished with a secondary appendage. Mandibles without an appendage, with a secondary plate only on the left mandible. Maxillipeds having the second and third joints produced into a squamiform plate. Gnathopoda not subchelate. Coxæ of the gnathopoda and the two anterior pairs of pereiopoda very large. The three posterior pairs of pleopoda uniform. Telson squamiform, cleft.

1. **Stegocephalus Ampulla.** (Plate X. fig. 2.) B.M.

Cancer Ampulla, *Phipps, Voy. au Pôle Boréale,* (*App.*) pl. 12. f. 2.
Gammarus Ampulla, *Sabine, Parry's First Voyage,* (*Suppl.*) p. 229.
Ross, Parry's Polar Voyage, (*Suppl.*) p. 204.
Lysianassa (?) Ampulla, *Edwards, Hist. des Crust.* t. iii. p. 22.
Stegocephalus inflatus, *Kröyer, Naturtidsk.* iv. 150, 1842.
Stegocephalus Ampulla, *Bell, Belcher's Last of the Arctic Voyages,* (*App.*) p. 406, pl. 35. fig. 1.

Cephalon very short, being half as long as the first segment of the pereion, produced into a short rostrum, incurved. Pereion arcuated and inflated. Pleon a little compressed laterally. Eyes not visible in the dead animal. Superior antennæ thicker than the inferior, having the flagellum longer than the peduncle, and furnished with a minute secondary appendage consisting of a single joint. Inferior antennæ having the peduncle longer than the peduncle of the superior. First pair of gnathopoda scarcely smaller than the second, and uniform with them. The second pair having the carpus as broad as the propodos; the inferior margin of the propodos furnished with stout obtuse hairs fringed with cilia. Pereiopoda subequal, the coxæ of the last three pairs

short. The three posterior pairs of pleopoda double-branched, styliform, naked, the last not longer than the preceding. Telson squamiform, narrowing from the base, cleft at the apex.

Length rather more than one inch.

Hab. Northumberland Sound (*Sir Edward Belcher*). Spitzbergen and other places in the Arctic regions.

A specimen lent to me by Mr. Albany Hancock was dredged in about 66° 30′ N. lat. and 68° W. long., by Messrs. Warham and Harrison.

Subfamily 2. LYSIANASSIDES.

Superior antennæ very short, thick at the base and suddenly tapering. Coxæ of the four anterior pairs of appendages very deep, the fourth not broader than the preceding.

This subfamily may be readily distinguished by the form of the animal, which is not much compressed, the shortness of the second and third joints of the peduncle of the superior antennæ, and the depth of the coxæ of the four anterior pairs of legs. The first pair of gnathopoda are, generally, short and strong, the second long (induced by the great development of the ischium and carpus) and feeble: an exception exists in *Callisoma*, where the first are feeble and the second strong. It is one of the most natural of the subfamilies. The genera may be arranged thus:—

a. Those that have the second pair of gnathopoda feeble and imperfectly cheliform, and the first strong.

b. Those that have the second pair of gnathopoda robust and cheliform, and the first feeble.

a. *Second pair of gnathopoda feeble and imperfectly cheliform, and the first strong.*

6. LYSIANASSA.

Lysianassa, *Edwards, Ann. Sc. Nat.* t. xx.; *Hist. des Crust.* iii. p. 20. *Dana, U.S. Explor. Exped.* p. 908.

Superior antennæ pyriform, very short, stouter than the inferior, and furnished with a secondary appendage. Mandibles having an appendage; the incisive edge not furnished with teeth; armed upon the anterior margin with a stout tubercle; secondary or moveable plate wanting. Maxillipeds with large squamiform processes attached to the third and fourth joints. First pair of gnathopoda not subchelate. The second pair subchelate, imperfectly developed, long, and membranous. Ischium and carpus long. Dactylos rudimentary. Coxæ of the gnathopoda and the

two anterior pairs of pereiopoda deeper than their respective segments of the pereion; those of the second pair of pereiopoda produced inferiorly and posteriorly. Coxæ of the fourth pair much shorter than the third. Pereiopoda subequal. Posterior pair of pleopoda double-branched. Telson single, squamiform, entire.

1. Lysianassa nugax. (Plate X. fig. 3.) B.M.

Cancer nugax, *Phipps, Voy. au Pôle Boréale*, p. 192. pl. 12. f. 3.
Talitrus nugax, *Ross, Parry's Third Voyage*, p. 119, and *Polar Voyage*, p. 205.
Gammarus nugax, *Sabine, Supp. to Parry's First Voyage*, p. cexxix. *Owen, Supp. to Ross's Second Voyage in Search of a N. W. Passage*, p. lxxxvii.
Lysianassa bidenticulata, *Spence Bate, Ann. N. H.* May 1858, p. 362.
Anonyx lævigatus, *Stimpson, MS.*

Eyes ovate, light brown. Superior antennæ short. Inferior antennæ not longer than the superior. Epistome rounded in front, projecting, wedge-shaped. Maxillipeds having a long dactylos; squamiform processes marked with radiating striæ. First pair of gnathopoda having the carpus short, the propodos long, the dactylos short and slightly bent. Second pair of gnathopoda with the carpus long, propodos very short, palm advanced. Meros, carpus, and propodos tufted with short hairs and fasciculi of long hairs. The third segment of the pleon having a short obtuse tooth near the middle of the posterior margin and another at the inferior angle. Posterior pair of pleopoda having the rami not longer than the basal articulation. Telson slightly cleft.

Length $1\frac{1}{4}$ inch.

Hab. Arctic Ocean (*Stimpson, Ross, Phipps, &c.*).

The drawing from which the figure is taken was made from a specimen in the Royal College of Surgeons; it is split in two halves, and consequently had already been examined; it is probably the original of the one described in 'Ross's Voyage.'

I have also compared it with *Anonyx lævigatus* of Stimpson, a specimen having been sent to me by my valued correspondent the industrious Zoologist of the United States' Expedition to Japan. I am therefore enabled to identify them.

2. Lysianassa Kröyeri. (Plate X. fig. 4.) B.M.

Ephippiphora Kröyeri, *White, Ann. & Mag. Nat. Hist.* ser. 2. vol. i. p. 226, 1848, and *Zool. Erebus & Terror*, pl. 5.

Animal not much compressed, smoothly arcuate; a dorsal sinus in the fourth segment of the pleon. Eyes reniform. Superior antennæ having the first joint of the peduncle reaching scarcely beyond the ocular process of the cephalon, the second and third joints very

short; the flagellum not longer than the peduncle. Inferior antennæ three times as long as the superior, the peduncle not extending beyond the peduncle of the superior flagellum. First pair of gnathopoda having the propodos nearly three times as long as the carpus, and armed upon the under side with a strong curved spine near the base of the dactylos. Second pair of gnathopoda having the propodos a little shorter than the carpus, and both inferiorly covered with minute denticles; the propodos furnished upon the superior margin with tufts of long hair, serrated on both margins; palm short, inferior angle produced into a tubercle; dactylos not so long as the palm. Coxæ of the second pair of pereiopoda having the lower half of the posterior margin greatly produced. Posterior pair of pleopoda having the rami much longer than the basal articulation.

Length one inch.

Hab. Van Diemen's Land (*Sir J. C. Ross*).

The figure and description are taken from Mr. White's typical specimen.

3. Lysianassa Magellanica. (Plate X. fig. 5.)

Lysianassa Magellanica, *Edwards.*
Lucas, Anim. nouv. ou rares dans les parties Australes de l'Amérique du Sud, par Francis de Castelnau; Entomol. par M. H. Lucas.

Cephalon short and small. Pereion arcuate; segments deep, not much compressed. Antennæ subequal, slight. First pair of gnathopoda having the carpus shorter than the propodos; second pair having the propodos and carpus subequal. Three posterior pairs of pereiopoda short, stout, subequal; basos round; posterior margin smooth, overlapping the ischium. Posterior pair of pleopoda having the rami styliform, clean, scarcely longer than the base.

Length about three inches.

Hab. Magellan (*M. d'Orbigny*).

The figure was traced from a plate, through the great kindness of M. Lucas, before the publication of his work, and corrected from a specimen—the original type, I believe, of M. Milne-Edwards—preserved in the Museum of the Jardin des Plantes.

4. Lysianassa nasuta. (Plate X. fig. 6.)

Lysianassa nasuta, *Dana, U. S. Explor. Exped.* p. 915. pl. 62.

"Body much compressed. Coxæ very large. Eyes reniform. Superior antennæ short, longer than the inferior; flagellum about seven-jointed, appendage three- or four-jointed. First pair of gnathopoda with a small dactylos, not longer than one-third of

the propodos; propodos oblong, narrower at apex; setæ not more than half as long as the joint. Second pair of gnathopoda ending in a spatulate joint, which is rounded at the apex, and has an obsolete claw at the middle of the apical margin. First and second pairs of gnathopoda setose below, the setæ rather long; three posterior pairs gradually increasing in length; the propodos of the last pair slender, with the setæ hardly half the diameter of the joint in length.

"Length of body five lines.

"*Hab.* Rio Janeiro; Brazil."—*Dana.*

5. Lysianassa variegata. (Plate X. fig. 7.) B.M.

Anonyx variegatus, *Stimpson, Proc. Acad. Nat. Sci. U.S.* 1855.

Eyes reniform, black. Superior antennæ having the flagellum scarcely as long as the peduncle; second appendage four-jointed. Inferior antennæ not longer than the superior. First pair of gnathopoda having the carpus longer than the propodos. Second pair of gnathopoda having the carpus longer than the propodos; palm deeply cleft; inferior angle obtusely produced; tufted inferiorly with short hairs, and superiorly, at the extremity of the propodos, with long ones, slightly curved and ciliated upon the concave margin, on the convex furnished with a short process near the apex. Posterior edge of the basos of the three posterior pairs of pleopoda smooth; posterior pair of pleopoda with the rami not longer than the base. Length about $\frac{1}{2}\frac{2}{0}$ths of an inch.

Hab. Simon's Bay, Cape of Good Hope (*Stimpson*).

The figure is taken from a specimen sent to me by the author. With the exception of the deeply-cleft palm of the second pair of gnathopoda, I can perceive but little difference in it from *L. Costæ*.

6. Lysianassa appendiculata. (Plate X. fig. 8.)

Lysianassa appendiculata, *Kröyer, Grön. Amfip.* pl. 1. f. 2.
Edw. Hist. des Crust. t. iii. p. 21.

Eyes long, narrow above, broad below, curved (like an inverted comma). Inferior pair of antennæ longer than the superior, having each joint of the flagellum broader than long, and furnished with a small (shoe-shaped?) calceola*. Posterior margin of the basos of the three posterior pairs of pereiopoda serrated.

* This term has been suggested and used by Stimpson for the small membranous appendages, which often resemble an inverted shoe, upon the flagellum of the inferior pair of antennæ. Mr. Stimpson informs me that they characterize the males only. They certainly are not common to all males, but appear to be more numerous in Transatlantic species than in European.

This short description is taken from Kröyer's figure, and from which our own is copied.

Hab. Greenland (*Kröyer*).

7. Lysianassa Vahlii. (Plate X. fig. 9.)

Lysianassa Vahlii, *Kröyer, Grön. Amfip.* pl. 1. f. 1.
Edwards, Hist. des Crust. t. iii. p. 21.
Anonyx Vahlii, *Kröyer, Voyage en Scand.* pl. 14. f. 1*a*.
Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. 1851.

Much like *L. Kröyeri*, but having no dorsal sinus upon the pleon. Eyes oval. Superior antennæ short; inferior not longer than the superior. Coxæ very deep. Coxa of the fourth pair of perciopoda produced inferiorly and posteriorly to quite half the breadth of the fifth.

Hab. Greenland (*Kröyer*).

I have seen no specimen of this species. Kröyer appears to hesitate as to whether it should be referred to *Anonyx* or to this genus.

8. Lysianassa Atlantica. (Plate X. fig. 10.) B.M.

Gammarus Atlanticus, *Edw. Ann. Sc. Nat.* t. xx.
Lysianassa Atlantica, *Edw. Hist. des Crust.* t. iii. p. 22.
Lysianassa marina, *Spence Bate, Synops. Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 168.
Opis typica, *White, Hist. Brit. Crust.* p. 165; *Cat. B.M.* 1850, p. 49.

Superior antennæ having the first joint of the peduncle thick; upper surface arcuate; second and third joints very short; flagellum not so long as the peduncle. Inferior antennæ having the peduncle reaching to the extremity of the peduncle of the superior; flagellum twice as long as the peduncle. First pair of gnathopoda long, slender, having the carpus and propodos subequal. Second pair of gnathopoda having the carpus a little longer than the propodos; palm at right angles with the inferior margin, slightly ciliate; upper margin of propodos fringed with several long hairs. Perciopoda subequal; posterior pair of pleopoda lanceolate, clean.

Length $\frac{6}{10}$ths of an inch

The specimen in the Collection of the Jardin des Plantes, from which Milne-Edwards described the species, and which I have had an opportunity of examining, was found in the Atlantic Ocean. That from which the figure is taken was dredged in Plymouth Sound. Mr. Edward, the industrious naturalist of Banff, has sent it to me from that locality.

Hab. Ireland, Strangford Loch (*Mr. W. Thompson*).

9. Lysianassa Costæ. (Plate X. fig. 11.) B.M.

Lysianassa Costæ, *Edw. Ann. des Sci. Nat.* t. xx. p. 365. pl. 10. f. 17; *Hist. des Crust.* t. iii. p. 21.
White, Hist. Brit. Crust. p. 167.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
Gammarus glaber, (*Spinola*) *White, Cat. Brit. Mus.* (*Crustacea*), 1847.

Eyes reniform, brown, moderately large. Superior antennæ with the peduncle as long as the cephalon; the flagellum scarcely as long as the peduncle. Inferior antennæ not longer than the superior; peduncle same length as the superior. Epistome rounded in advance, wedge-shaped. Mandibles long and narrow; anterior margin near the incisive edge furnished with a small projecting tubercle or blunt tooth. Maxillipeds with a short dactylos; the squamiform process not denticulated, but slightly crenulated. First pair of gnathopoda having the propodos scarcely longer than the carpus. Second pair of gnathopoda with the propodos much shorter than the carpus. Third, fourth, and fifth pairs of perciopoda with the posterior margin of the basos crenulated, each depression marked with a minute hair. Rami of the posterior pair of pleopoda not so long as the peduncle. Telson simple.

Length of British specimen $\frac{1}{20}$ths of an inch.

Holböll has taken it at Sukkertopper, Greenland, in forty fathoms. I have dredged it at Plymouth; Mr. Webster has also dredged it at Tenby. The Marquis of Spinola presented specimens to the British Museum, from the shores of Italy; and Edwards described the type, which is preserved in the Museum of the Jardin des Plantes, from a specimen taken at Naples.

10. Lysianassa Audouiniana. (Plate XI. fig. 1.) B.M.

Lysianassa Audouiniana, *Spence Bate, Brit. Assoc. Rep.* 1855; *Synops. Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
A. White, Hist. Brit. Crust. p. 168.

Cephalon short. Pereion long, arcuate. Eyes large, oblong, broader below than above; white, with black spots. Superior antennæ having the flagellum shorter than the peduncle. Inferior antennæ having the peduncle not so long as the peduncle of the superior; flagellum rudimentary. First pair of gnathopoda having the dactylos slightly curved, furnished below with two minute short teeth or spines. Second pair of gnathopoda having the inferior angle of the palm advanced, so as to be almost chelate, fringed inferiorly and superiorly with long simple hairs. Perciopoda robust, subequal. Antepenultimate pair of pleopoda having the rami styliform, slightly curved, clean: penultimate pair having the rami like the preceding, but minutely serrated upon the posterior mar-

gin: ultimate pair having the rami dissimilar, the outer one biarticulate, the first joint serrated posteriorly, the second clean; the inner ramus clean, dorsally serrated anteriorly.

Length $\frac{7}{20}$ths of an inch.

Dredged in Plymouth Sound (*C. S. B.*). Colour, corneous yellow.

11. Lysianassa longicornis. (Plate XI. fig. 2.) B.M.

Lysianassa? longicornis, *Lucas, Algérie*, pl. . f. 2.
Lysianassa Chausica, *Spence Bate, Synops. Brit. Amph., Ann. Nat. Hist.* Feb. 1857 (not *Edwards*).
White, Hist. Brit. Crust. p. 168.

Cephalon having the ocular processes produced to a point, rather turned down, and half as long as the first joint of the peduncle of the superior antennæ. Eyes reniform, black. Superior antennæ having the peduncle much longer than the flagellum; complementary appendage nearly as long as the flagellum. Inferior antennæ having the last joint of the peduncle longer than all the others, and reaching to the extremity of the superior antennæ; the flagellum is very long, longer than the entire animal, very slight, and generally folded back beneath the body; each joint is a little longer than broad, and carries a calceola and two small hairs. Epistome rounded, projecting. First pair of gnathopoda having the carpus shorter than the propodos. Second pair of gnathopoda having the carpus longer than the propodos, tufted with short hairs inferiorly and long hairs superiorly. Last three segments of the pleon suddenly smaller; posterior pair of pleopoda longer than the preceding, fringed with plumose hairs.

Length about half an inch.

Colour orange, mottled with red. It is perhaps the most beautiful species of the genus.

M. Lucas, to whom I have to express great obligation for allowing me to examine specimens from his private collection of Amphipoda, described this species from a specimen found on the coast of Algiers, which appears to be identical with the British. The specimen from which our figure is taken was dredged in Plymouth Sound. I have received a fragment of one from my valued correspondent Mr. Edward, of Banff.

12. Lysianassa? Brasiliensis. (Plate XI. fig. 3.)

Lysianassa? Brasiliensis, *Dana, U.S. Explor. Exped.* p. 914. pl. 62. f. 1.

"Body much compressed; coxæ very large. Eyes reniform. Superior antennæ short, less than a fourth of the body in length; flagellum twice as long as base, about ten-jointed, appendage seven-

jointed. Inferior antennæ about two-thirds as long as body, often bent backwards and concealed beneath the coxæ; the peduncle short, having the penultimate joint very stout. Two anterior pairs of gnathopoda similar, slender. First pair of pereiopoda longer than second; third to fifth gradually increasing in length; posterior margin of first joint serrulate.

"Length about one-fourth of an inch.

"Colour a tinge of green.

"*Hab.* Rio Janeiro, about the sand-beach near the Sugar-loaf."—*Dana.*

The author observes that, "not having specimens, it is possible that the gnathopoda may be imperfectly subchelate, on which account it may be nearer *Anonyx* than *Lysianassa*."

13. Lysianassa spinicornis.

Lysianassa spinicornis, *Costa, Rend. della Reale Accad. delle Sc. di Napoli*, p. 172, 1853.

"Having the first joint of the peduncle of the superior antennæ produced anteriorly and inferiorly into a spine; third joint scarcely shorter than the second; flagellum as long as the peduncle. Inferior antennæ a little shorter than the superior, flagellum scarcely longer than the peduncle. Eyes very large. Second pair of gnathopoda having a dactylos. Three posterior pairs of pereiopoda subequal in length.

"Length $3\frac{1}{2}$ lines.

"*Hab.* Coast of Naples."—*Costa.*

14. Lysianassa loricata.

Lysianassa loricata, *Costa, Rend. della Reale Accad. delle Sc. di Napoli*, p. 172, 1853.

"Antennæ subequal; joints of the superior considerably decreasing; flagellum as long as the peduncle; flagellum of the inferior half as long again as the peduncle. Second pair of gnathopoda having a minute dactylos. Fourth pair of pleopoda distinctly surpassing the fifth, and the fifth the sixth.

"Length four lines.

"*Hab.* Coast of Naples."—*Costa.*

15. Lysianassa humilis.

Lysianassa humilis, *Costa, Rend. della Reale Accad. delle Sc. di Napoli*, p. 172, 1853.

"Antennæ short, subequal. Third joint of the peduncle of the su-

perior antennæ nearly as long as the second; flagellum scarcely shorter than the peduncle. Second pair of gnathopoda without a dactylos. Pleopoda subequal in length.

"Length three lines.

"*Hab.* Coast of Naples."—*Costa.*

7. ANONYX.

Anonyx, *Kröyer, Grönland, Amfipoda*; *Tidskr.* ii. p. 256.

Superior antennæ short; the peduncle very large at the base, and furnished with a secondary appendage. Mandibles with a smooth incisive margin and no secondary plate, and having an appendage. First pair of gnathopoda subchelate; second pair long, slender, feeble, rudimentary, subchelate. Telson single, squamiform, cleft.

The genus *Anonyx* was founded by Kröyer to receive those crustacea that differ from *Lysianassa* in having the first pair of gnathopoda prehensile. This is the only generic character in which they are separated from each other, and without examination it is not possible to distinguish one from the other. It is also probable that future research may show this to be only a sexual distinction in some species.

1. Anonyx longicornis, n. s. (Plate XI. fig. 4.) B.M.

The central dorsal line slightly carinated. Third segment of the pleon tuberculated at the posterior dorsal margin; the fourth marked with a deep dorsal sinus, and elevated posteriorly into a tubercle or blunt tooth. Superior antennæ very short, scarcely reaching beyond the penultimate joint of the peduncle of the inferior; the first joint of the peduncle of the superior antennæ considerably produced above into a squamous process, which stands out prominently when the antennæ are bent down. Inferior antennæ having the last joint of the peduncle very long, and swelling near the middle beneath; flagellum having the joints long and slender, reaching beyond the entire length of the animal (each furnished with a calceola). First pair of gnathopoda long and slight; the carpus longer than the propodos, both cylindrical; palm short, concave. Second pair of gnathopoda having the propodos nearly as long as the carpus; inferior angle produced anteriorly, almost chelate; dactylos short. Three posterior pairs of pereiopoda having the basos produced inferiorly, extending beyond the ischium, and partly over the meros; meros broad and angular. Ante- and penultimate pairs of pleopoda having the rami clean; the posterior pair are longer, slightly curved, more so on the upper

margin of each ramus than on the lower, plumose. Telson long, cleft.

Length half an inch.

Hab. Shetland (*Mr. G. Barlee*).

2. Anonyx Edwardsii. (Plate XI. fig. 5.) B.M.

Anonyx Edwardsii, *Kröyer, Voy. Scand.* pl. 16. f. 2.
Brandt, Voyage de Middendorf, pl. xi. f. 7.
Spence Bate, Brit. Assoc. Rep. 1855; *Synops. &c. Ann. Nat. Hist.* Feb. 1857.
Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. 1851.

Eyes reniform; white, with black spots. Superior antennæ having the peduncle as long as the cephalon, rounded above; flagellum not longer than the peduncle; first joint nearly half the length of the flagellum; secondary appendage nearly as long as the flagellum. Inferior antennæ about the same length as the superior. Epistome produced, rounded. Maxillipeds having the squamiform plate crenulate. First pair of gnathopoda short, stout, having the carpus and propodos subequal. Second pair long, having the propodos half as long as the carpus; dactylos rudimentary, tufted inferiorly with short hairs, and the propodos superiorly with long ones. Basos of the three posterior pairs of perciopoda covering the ischium, and having the posterior margin crenulate and fringed with solitary hairs. The posterior pair of pleopoda short, the rami scarcely longer than the base. Telson deeply cleft.

Length $\frac{5}{20}$ths of an inch.

This description and figure are taken from a British specimen. It differs from Kröyer's figure in having the palm of the first pair of gnathopoda smooth, whereas in Kröyer's it is slightly serrated. The inner edge of the dactylos is also serrated; this, too, I have observed in some specimens. In our figure there is likewise a slight crenulation along the posterior margin of the three anterior segments of the pleon, which would probably be overlooked without dissection under a good magnifying power. I think that, not having had an opportunity of examining the type, it is better to consider the present as the typical species, than to erect another upon characters so slight.

I have received this species from the Moray Frith (*Rev. G. Gordon*), Banff (*Mr. Edward*), Falmouth (*Mr. W. Webster*), and have dredged it in Plymouth Sound.

3. Anonyx tumidus. (Plate XI. fig. 6.)

Anonyx tumidus, *Kröyer, Voy. Scand.* pl. 16. f. 1.
Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. 1851.

This species, from Kröyer's figure, so closely resembles *A. Edwardsii*, that, without an examination of a recognized specimen, I should hesitate to define it.

4. **Anonyx obesus**, n. s. (Plate XII. fig. 1.) B.M.

Animal not much compressed; three posterior segments of the pleon very short, the three anterior very deep. Superior antennæ having a secondary appendage as long as the flagellum; inferior antennæ scarcely longer than the superior. First pair of gnathopoda strong, having the propodos tapering; palm very oblique, embracing nearly the whole of the inferior margin, and defined by one or two short stout spines; carpus produced inferiorly; the superior margins of the carpus and propodos together arcuate. Second pair of gnathopoda having the carpus and propodos subequal, and tufted with cilia. Three posterior pairs of pleopoda clean. Telson obtuse, cleft into two round plates.

Length $\frac{5}{20}$ths of an inch.

Hab. Moray Frith (*Mr. Edward*).

The animal may be readily distinguished from the other species by its fat and corpulent appearance, from which its name is derived.

5. **Anonyx denticulatus.** (Plate XII. fig. 2.) B.M.

Anonyx denticulatus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Pleon having the infero-posterior angle of the second and third segments produced into a tooth, that of the third long, and directed upwards at right angles to the posterior margin of the segment. Superior antennæ having the second joint of the peduncle short; third very short, shorter below than above; secondary appendage consisting of one long and two short joints; first joint of flagellum longer than secondary appendage, and furnished upon the inner side with two longitudinal series of transverse rows of short hairs; the remaining joints of the flagellum (about 13) together scarcely longer than the first joint. Inferior pair of antennæ more than half the length of the animal. Mandibles having each extremity of the incisive edge produced beyond the intermediate portion, and having short obtuse spines on the squamiform plate. First pair of gnathopoda having the carpus as long as the propodos; the palm convex, not defined, continuous with the inferior margin, distinctly pectinated; dactylos long, simple. Second pair of gnathopoda minutely chelate, and protected and hid by much hair, fringed at the margin. Pereiopoda having the dactylos very long. Posterior pair of pleopoda scarcely longer than the preceding. Telson oval, deeply cleft, the apex of each division terminating in a minute obtuse spine.

Length $\frac{7}{20}$ths of an inch.

Some of the hairs upon the propodos of the first pair of gnatho-

poda terminate in a trident; others have the point reflexed, so as to form a club-shaped extremity. Under the microscope, a little membranous cap or hood is seen to be attached to the extremity of the dactylos, which is pointed and solid, and overtops the sharp point,—an unusual appendage, which may enable the animal to expose or cover the unguiculate extremity at will.

This species appears to be rare, and peculiar to the North; I have only received it from the Moray Frith. It has been sent to me by my valued correspondents the Rev. George Gordon and Mr. Edward.

6. **Anonyx exiguus.** (Plate XII. fig. 3.) B.M.

Anonyx exiguus, *Stimpson, Marine Invert. of Grand Manan*, p. 51, 1853.

Pleon having "the third segment tumid posteriorly, and curved down towards the fourth;" the posterior margin deeply concave; the infero-posterior angle produced and directed upwards; fourth segment having a deep dorsal sinus. Pereiopoda having the dactylos long and slender; basos of the three posterior margins deeply serrated along the posterior margin.

Length $\frac{4}{20}$ths of an inch.

"Colour yellowish."

"Dredged on sandy bottoms in 8–15 fathoms, east of the passage off Cheney's Head, Grand Manan."—*Stimpson.*

The figure and description are taken from a specimen forwarded to me by the author.

7. **Anonyx Holböllii.** (Plate XII. fig. 4.) B.M.

Anonyx Holböllii, *Kröyer, Voy. Scand.*
Spence Bate, Rep. Brit. Assoc. 1855; *Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 170.
Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. 1851.

Eyes oblong, red. Superior antennæ half as long as the inferior; secondary appendage nearly as long as the flagellum. Inferior antennæ about one-fifth the length of the animal. First pair of gnathopoda having the propodos a little longer than the carpus; the palm oblique, minutely pectinate, and defined by one or two spines near the inferior angle; dactylos with a tooth near the middle of the concave margin. Second pair of gnathopoda having the carpus longer than the propodos, and the dactylos very minute. Three posterior pairs of pereiopoda having the basos serrated.

Length $\frac{13}{20}$ths of an inch.

Colour translucent white, blushed with rose along the dorsal surface of the pereion and the posterior segments of the pleon.

Brought from Sukkertopper, in Greenland, by M. Holböll, in compliment to whom Kröyer named the species. It has been sent to me from the Moray Frith by the Rev. George Gordon, from Banff by Mr. Edward, and from Shetland by Mr. Barlee. I have taken it in Plymouth Sound.

The figure is taken from a North British specimen, and has been compared with one in the collection presented to the British Museum by M. Holböll.

8. **Anonyx nobilis.** (Plate XII. fig. 5.) B.M.

Anonyx nobilis, *Stimpson, Marine Invert. of Grand Manan*, p. 50, 1853.

Eyes black, ovate. Superior antennæ having the first joint of the peduncle as long as the cephalon, the whole organ extending nearly to the fourth segment of the pereion. Inferior antennæ a little longer than the superior, having every alternate joint surmounted by an oval pedunculated calceola. First pair of gnathopoda having the propodos longer than the carpus; inferior margin parallel with the superior; palm short, slightly oblique, spinous at the inferior angle; the dactylos longer than the palm. Second pair of gnathopoda having the propodos rhomboid; dactylos rudimentary; the carpus cylindrical, and covered with short straight hairs; the inferior angle of the carpus furnished with an armour of pectinate scales. Posterior margin of the basos of the three posterior pairs of pereiopoda serrated. Posterior pair of pleopoda much longer than the preceding.

"Length three-fourths of an inch."

"Colour white; antennæ light fawn."

"It was taken in considerable numbers on the sandy flats of Fisher's Cove, Nantucket Island, at low-water mark."—*Stimpson.*

The figure and description are taken from a specimen kindly sent to me by the author.

9. **Anonyx minutus.** (Plate XII. fig. 6.) B.M.

Anonyx minutus, *Kröyer, Voy. Scand.* pl. 18. f. 2.
Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. 1851.

Eyes small, round. Superior antennæ having the third joint of the peduncle almost obsolete; flagellum very short, first joint forming half the length, fringed upon the inside with two rows of hairs placed in a series of short lines. Inferior antennæ three times as long as the superior; the flagellum having the joints short, and presenting a baccate appearance. First pair of gnathopoda short, the propodos having the inferior margin nearly parallel with the superior, and a little broader at the posterior end than at the palm;

palm at a right angle; dactylos short, obtuse. Second pair of gnathopoda having the propodos short, plentifully tufted with hairs that almost hide the dactylos. The inferior surface of the carpus covered with an armour of tridentate scales. The two posterior pairs of perciopoda having the basos ovate, and extending to and covering half the meros. Posterior pair of pleopoda short, the rami not longer than the base; a dorsal sinus upon the fourth segment.

Length $\frac{6}{20}$ths of an inch.

I have received this species from Strangford Loch, where it was dredged by Mr. George Barlee, and from Falmouth, by Mr. W. Webster. I have also dredged it in Plymouth Sound.

10. **Anonyx lagena.** (Plate XII. fig. 7.) B.M.

Lysianassa *vel* Anonyx lagena, *Kröyer, Grön. Amfip.* p. 9. tab. 1. f. 1.
Lysianassa lagena, *Edwards, Hist. des Crust.* t. iii. p. 21.
Bell, Belcher's Last of the Arctic Voyages, Appendix.
Anonyx vorax, *Stimpson, MS.* *

Eyes large at bottom, like an inverted comma. Inferior antennæ as long again as the superior. Mandibles having a tubercle within and below the appendage; a posteriorly directed tooth upon the anterior extremity of the incisive margin, and a sharp curved tooth a little above the posterior extremity. First pair of gnathopoda having the carpus rather broader than the propodos; the propodos gradually narrowed from the carpus to the palm, where it again slightly increases in width; palm not oblique, pectinate; the inferior angle armed with one or more short spines. The second pair of gnathopoda having the propodos more than half as long as the carpus. The posterior margin of the third segment of the pleon deeply concave. Posterior pair of pleopoda longer than the preceding. Telson deeply cleft.

Length nearly an inch and a half.

I have been enabled to compare a specimen of Stimpson's species, *A. vorax*, with a specimen of *A. lagena* presented to the British Museum by M. Holböll, and can perceive no specific distinction between the two.

Kröyer records the species as from Greenland; Holböll's specimen, in the British Museum, was also procured there. Sir James Ross brought some home from the Arctic Seas; and Mr. Stimpson's species, *A. vorax*, was taken in Behring's Straits. Specimens of this species are preserved in the Museum of the Royal College of Surgeons.

* The names referred to Stimpson's MS. are those attached to the specimens that he so kindly sent to me, and which I have not been able to find in his published works, for most of which I am also indebted to him.

11. **Anonyx ampulloides.** (Plate XII. fig. 8.) B.M.

Anonyx ampulloides, *Stimpson, MS.*

In general aspect this species resembles *Anonyx lagena*; but close examination shows the following distinctions:—

The inferior antennæ are much longer than the superior. The first pair of gnathopoda have the palm fringed with fine hairs, but not a comb-like margin. The second pair of gnathopoda have the carpus slight, and much longer than the propodos; the dactylos quite rudimentary. Telson deeply divided, becoming almost a double appendage.

Length half an inch.

I am indebted for this specimen to the kindness of the author, who brought it from Japan.

12. **Anonyx nanus.** (Plate XII. fig. 9.) B.M.

Anonyx nanus, *Kröyer, Voy. Scand.* pl. 17. f. 2.

This species, so far as I can judge from Kröyer's figure, not having seen a specimen, differs from *tumidus* in having the inferior antennæ as long again as the superior.

13. **Anonyx Plautus.** (Plate XIII. fig. 1.) B.M.

Anonyx Plautus, *Kröyer, Voy. Scand.* pl. . f. 1 *a*.

Eyes small. Inferior antennæ scarcely longer than the superior. First pair of gnathopoda having the propodos rounded above and straight beneath; the palm occupying the whole of the inferior margin. The three posterior pairs of pereiopoda short, robust, having the basos serrated and reaching to nearly half of the meros. The peduncle of the three posterior pairs of pleopoda enlarged towards their extremities; the rami short. Telson round; apex depressed, scarcely cleft.

Length $\frac{4}{20}$ths of an inch.

The specimen from which the figure is taken was procured near Banff, by our esteemed correspondent Mr. Edward.

14. **Anonyx punctatus.** (Plate XIII. fig. 2.) B.M.

Anonyx punctatus, *Stimpson, MS.*

Eyes small, round, red. Antennæ subequal. First pair of gnathopoda having the propodos much longer than the carpus; the palm short, oblique, and armed at the inferior angle with two or three short stout spines; inferior margin parallel with the superior. Second pair of gnathopoda having the propodos more than half as

long as the carpus; inferior margin of the carpus squamous; hairs reversely ciliated upon one side. Basos of each of the three posterior pairs of perciopoda minutely serrated.

Length rather more than half an inch.

The figure and description are taken from a specimen sent to me by the author. It was found in Behring's Straits.

15. **Anonyx annulatus.** (Plate XIII. fig. 3.) B.M.

Anonyx annulatus, *Stimpson, MS.*

Eyes ovate. Inferior antennæ rather longer than the superior. First pair of gnathopoda having the palm scarcely oblique, short, furnished laterally with a few hairs; dactylos longer than the palm. Second pair of gnathopoda having the carpus a little longer than the propodos, and very much broader near the middle, furnished superiorly with hairs and inferiorly with short spines (?) or scales. Propodos minutely chelate, plentifully covered with hairs. Dorsal sinus on the fourth segment of the pleon.

Length nearly $\frac{1}{4}$ inch.

The specimen from which the figure and description are taken was kindly forwarded to me by the author, who procured it at Japan, while engaged as Zoologist to the U. S. Surveying Expedition to the North Pacific, Japanese Seas, &c.

16. **Anonyx longipes**, n. s. (Plate XIII. fig. 4.) B.M.

Eyes small. Superior antennæ having the flagellum not longer than the peduncle; secondary appendage short. Inferior antennæ half as long again as the superior; epistome pointed. First pair of gnathopoda having the carpus and propodos subequal, the margins parallel; palm short, slightly oblique, fringed with small spines, and two larger ones near the inferior angle; dactylos bearing two teeth upon the internal margin. Second pair of gnathopoda having the carpus longer than the propodos. Perciopoda long and slender, each having a long, slightly curved, styliform dactylos. Posterior pair of pleopoda scarcely reaching beyond the preceding.

Length about half an inch.

Hab. Shetland (*Mr. Barlee*).

17. **Anonyx ampulla.** (Plate XIII. fig. 5.) B.M.

Anonyx ampulla, *Kröyer, Voy. Scand.* pl. 13. f. 2.

Inferior antennæ nearly five times as long as the superior; peduncle not reaching beyond the peduncle of the superior; flagellum

slender; epistome pointed. First pair of gnathopoda having the carpus as long as the propodos; the inferior margin of both continuous, and parallel with the superior; palm scarcely oblique. Second pair of gnathopoda having the carpus and propodos subequal in length and diameter, cylindrical, having the long hairs forked; dactylos rudimentary. The squamiform coxæ of both pairs of gnathopoda upon the inferior margin near the posterior angle developed into a tooth, caused by a small depression, from which a solitary hair is developed. Basos of pereiopoda not serrated. Posterior margin of the third segment of the pleon deeply concave. Posterior pair of pleopoda having the rami not longer than the base. Telson deeply cleft, laterally armed with three spines upon the upper surface and three upon the flattened apex of each division.

Length about $\frac{1}{2}\frac{2}{0}$ths of an inch.

The description and figure are taken from specimens procured in the Moray Frith by the Rev. G. Gordon, and near Banff by Mr. Edward. In Kröyer's figure the inferior antennæ are not so proportionately long, but in all other respects the agreement is such that they cannot be considered other than of the same species.

18. **Anonyx Fuegiensis.** (Plate XIII. fig. 6.)

Anonyx Fuegensis, *Dana, U. S. Explor. Exped.* p. 919. pl. 62. fig. 4.

"Eyes reniform. Superior antennæ hardly half as long as inferior pair; second and third joints of base very short; flagellum longer than base, seven- or eight-jointed. Inferior antennæ about half as long as body; base short; joints of flagellum hardly oblong (excepting near apex). Both pairs of gnathopoda quite small, similar, the first pair a little the smaller. Propodos very small, oblong, oblique at apex; dactylos minute. First and second pairs of pereiopoda equal, the setæ very short, those of the propodos much shorter than breadth of joint; fifth and sixth pairs nearly equal, basos broad and serrulate behind, setæ very short. Last segment of pleon oblong, emarginate.

"Length one-third to half an inch.

"*Hab.* Good Success Bay, Tierra del Fuego. Collected in eight or ten feet water, being brought up on meat set as bait by Lieut. Underwood."—*Dana.*

19. **Anonyx politus.**

Anonyx politus, *Stimpson, Marine Invert. of Grand Manan,* p. 50.

"Elongated, broad and rounded above, but with less height than is usual in *Anonyx*. Cephalon small, tumid, with the eyes sub-

rectangular, but broadest below, and of a bright red colour. Superior antennæ very short and thick, regularly tapering to a point, with a short accessory flagellum, and in length one-fourth of that of the inferior ones, which equal in length about one-half that of the body, and have very long and slender flagella. First pair of gnathopoda small and subcheliform; those of the second pair very long, but usually bent up beneath the coxæ, and terminating in a small, flat, rounded, hirsute extremity, without a dactylos. There is a depression between the third and fourth segments of the pleon. The three posterior pairs of pleopoda terminate in long, smooth, pointed rami. The telson consists of two pointed spines about two-thirds the length of the posterior pair of pleopoda. Colour light yellow.

"Length 0·4 inch.

"Dredged in 40 fathoms, on a soft muddy bottom, off Long Island, Grand Manan."—*Stimpson.*

I have not seen this species; but there is nothing in the description to distinguish it from *A. Holbölli.*

20. Anonyx pallidus.

Anonyx pallidus, *Stimpson, Marine Invert. of Grand Manan*, p. 50.

"Body short, slightly compressed, rounded above; with a dorsal sinus on the pleon, as in *A. politus*. Head with large, black, subclavate eyes, broadest below, as in *Lysianassa appendiculata*, Kröyer. Antennæ hairy, very short, the superior ones very thick and tapering, equalling the inferior ones in length, that is, reaching to the second segment of the pereion. Pereiopoda slender, very hairy, in structure like those of *A. politus*. The two penultimate pairs of pleopoda long and pointed, slightly serrated above; posterior pair short, thick, and spinous. Colour pale whitish, the brownish viscera showing through along the middle.

"Length 0·35 inch.

"Taken in four fathoms, in sand, off Duck Island moorings, and in twenty fathoms, mud and shells, off the northern point of Duck Island."—*Stimpson.*

21. Anonyx Norvegicus.

Anonyx Norvegicus, *Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Förhandl.* p. 22, 1851.

"This species resembles *A. Plautus*, but may readily be distinguished from it, by the superior antennæ of the female and male being nearly equal; the flagellum having fourteen joints; the secondary appendage having five joints, of which the first is about as long

as the other four. Inferior antennæ distinctly longer than the superior, more than twice as long in the male. Coxa of the second pair of pereiopoda deeply sinuated; of the fifth pair rather smaller than the preceding, but resembling it in other respects.

"*Hab.* Christiansund and Bergen, Norway."—*Liljeborg.*

8. PONTOPOREIA.

Pontoporeia, *Kröyer, Tidskr.* vol. iv. p. 152.

"Antennæ robust, subpediform; peduncles thick, elongated; having a very small secondary appendage to the superior pair. Mandibles (instrumenta cibaria) short and broad. Gnathopoda very short, robust; first pair subchelate, second with a rudimentary dactylos. First and second pairs of pereiopoda long, strong, subcheliform (?), the carpus dilated, and armed with a sharp conical dactylos. Third and fourth pairs of pereiopoda recurved; the basos moderately dilated; the dactylos small. Posterior pair of pereiopoda recurved; basos very largely developed, clypeiform; the dactylos nearly rudimentary. Coxæ large, having the inferior margin of each, except the posterior, furnished with plumose hairs. The anterior pairs of pleopoda rather short, and otherwise of the usual form. Three posterior pairs sharp and well armed."—*Kröyer.*

Dana, in his 'Classification of Crustacea,' has made this genus the type of a subfamily, PONTOPOREINÆ. In this he has evidently been led by Kröyer's describing the first and second pairs of pereiopoda as subcheliform, a statement that is not supported by Kröyer's own figures. I have therefore thought it advisable, since I have not seen any specimen, to retain the genus, but, while doing so, to arrange it next to *Anonyx*, from which it appears to differ immaterially.

1. Pontoporeia femorata. (PLATE XIV. fig. 1.)

Pontoporeia femorata, *Kröyer, Nat. Tidskr.* vol. iv. p. 153; *Voyage en Scand.* pl. 23. f. 2.

Eyes small, oval. Superior antennæ having the peduncle as long as the flagellum, and the first joint as long as the other two; secondary appendage uniarticulate. Inferior antennæ scarcely longer than the superior; the peduncle longer than the flagellum. First pair of gnathopoda short, robust; carpus broader than the propodos; propodos as broad as long; palm oblique, slightly concave; dactylos shorter than the palm. Second pair of gnathopoda having the carpus longer than the propodos. The two anterior pairs of pereiopoda differ in no respect from those of *Anonyx*. The posterior pair of pereiopoda have the basos larger than in the two

preceding pairs, and as long as the remaining joints of the appendage.

Length —— ?

Hab. S. Greenland Sea (*Kröyer*).

This description is taken from Kröyer's figure.

2. **Pontoporeia affinis.** (Plate XIV. fig. 2.)

Pontoporeia affinis, *Lindström, Ofvers. af Kongl. Vetensk. Akad. Forhandl.* p. 63, 1855.

Eyes oval. Superior antennæ having the first joint of the peduncle as long as the other two, furnished underneath with plumose hairs; flagellum rather longer than the peduncle; secondary appendage triarticulate. Inferior antennæ having the flagellum rather longer than the peduncle; the first joint much longer than broad, the succeeding six or seven broader than long. Posterior pair of pereiopoda resembling those of *P. femorata*. Telson cleft, each division having a rounded apex.

Length —— ?

Hab. Landskrona (?) (*Lindström*).

Lindström in his description lays much stress on the cellular structure of the internal tissues of the basos and coxa of the posterior pair of pereiopoda; but this, according to his figure, appears only to be the fatty or cellular structure common to all in the living state, particularly when the animal has but recently moulted.

9. OPIS.

Opis, *Kröyer, Nat. Tidskr.* ser. 1. vol. iv.

This genus differs from *Anonyx* in having the first pair of gnathopoda more perfectly chelate.

1. **Opis typica.** (Plate XIV. fig. 3.)

Opis typica, *Kröyer, Nat. Tidskr.* ser. 1. vol. iv.; *Voyage en Scand.* pl. 17. f. 1.

I only know the animal from Kröyer's figure and description. In general outline it nearly resembles *Anonyx Edwardsii*, from which it appears to differ only in the generic distinction.

Kröyer obtained his specimen from Holböll, who found it on the coast of Greenland. The specimen named *Opis typica* in the British Museum and in the Catalogue of 1850, as also in White's 'History of the British Crustacea,' is *Lysianassa Costæ* of M. Edwards.

2. **Opis Eschrichtii.** (Plate XIV. fig. 4.)

Opis Eschrichtii, *Kröyer, Nat. Tidskr.* vol. iv. p. 149.

This species appears to differ from *O. typica*, according to Kröyer's

description, in having the back deeply stained with rose-colour; the eyes black, large, reniform, and almost confluent at the top of the head; and in the posterior pair of pleopoda having long, ornate, plumose hairs.

Length 4 lines.

Hab. S. Greenland (*Holböll*).

10. ICHNOPUS.

Ichnopus, *Costa, Rend. della Reale Accad. delle Sci. di Napoli*, p. 169, 1853.

"Antennæ long and slender; superior having a secondary appendage. Gnathopoda long, slender, filiform, scarcely prehensile; first pair cylindrical, terminating in a minute dactylos inferiorly pectinated; second pair submembranaceous, having the apex of the propodos fimbriated; dactylos scarcely conspicuous."—*Costa.*

I have seen no specimen of this genus; but its separation from *Lysianassa* appears to be doubtful. Costa considers it a link between *Callisoma* and *Alibrotus*.

1. Ichnopus Taurus.

Ichnopus Taurus, *Costa, Rend. della Reale Accad. delle Sci. di Napoli*, p. 172, 1853.

"Superior antennæ a little shorter than half the body; flagellum four times as long as the peduncle. Inferior antennæ longer than the superior; peduncle twice as long as the peduncle of the superior. Basos of each of the three posterior pairs of pereiopoda serrated.

"Length 5 lines.

"*Hab.* Coast of Naples."—*Costa.*

b. *Second pair of gnathopoda robust and more or less cheliform, and the first feeble.*

11. CALLISOMA.

Callisoma, *Costa, Cat. Ital. Crust. by the Rev. Mr. Hope*, 1851*.
Scopelocheirus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 168.

Superior antennæ short, pyriform, and furnished with a secondary appendage. First pair of gnathopoda having the dactylos not

* *Callisoma punctata*, Costa? Mr. Hope refers to a species under this name, probably the type of Costa's genus. It is not in his paper in the 'Rendiconto della Reale Accademia delle Scienze di Napoli,' 1853, nor do I know where it is to be found.

unguiculate; second pair developed into perfect chelæ. Posterior pair of pleopoda unibranched. Telson double.

This genus may readily be confounded with *Anonyx* and *Lysianassa*, unless the gnathopoda and telson be examined.

1. Callisoma crenata. (Plate XIV. fig. 5.) B.M.

Scopelocheirus crenatus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 167.

Cephalon furnished with a short flat rostrum; infero-anterior angles produced. Eyes small, reniform, having black spots on a white ground. Superior antennæ having the peduncle very large at the base; first joint much larger than the two succeeding; third almost enclosed within the second; flagellum with the first joint pyriform and nearly as long as all the rest, which consists of six or seven joints; secondary appendage uniarticulate. Inferior antennæ about one-third the entire length of the animal, very slender and delicate; the peduncle reaches quite to the extremity of the peduncle of the superior. The first pair of gnathopoda have the dactylos developed into a brush of short curved hairs, all traces of the typical form being lost; propodos cylindrical, and fringed with strong curved hairs near the extremity; carpus longer than the propodos. Second pair of gnathopoda chelate, the propodos having the inferior angle anteriorly produced and unguiculate, forming with the dactylos a perfect claw; carpus as long as the propodos. Third pair of pereiopoda shorter than the fourth and fifth, having the meros posteriorly squamiformly developed; fourth and fifth pairs having the meros cylindrical. Fourth segment of the pleon with a deep notch across the dorsal surface. Posterior pair of pleopoda much longer than the two preceding. Telson carrying a solitary subapical hair upon each division.

Length $\frac{5}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*); Macduff, from a haddock's stomach, from 30 to 40 fathoms (*Mr. Gregor*); Plymouth Sound (*C. S. B.*).

The specimen from which the figure and description are taken was dredged in Plymouth Sound; when alive it was of a bright lemon-colour, with a white border to each plate, the whole being covered with small black spots. The other specimens were dead before I received them; they were generally fawn-colour, tending to bluish-grey towards the back. This appearance, together with their being less compressed than *Anonyx* or *Lysianassa*, enabled them readily to be recognized. The notch upon the fourth segment of the pleon is an unerring feature.

2. Callisoma Hopei. (Plate XIV. fig. 6.)

Callisoma Hopei, *Costa, Cat. Ital. Crust. by the Rev. Mr. Hope*, 1851.

I only know this species from Mr. Hope's figure and description. It appears to differ from *C. crenata* in the following more or less important particulars:—

Eyes increasing downwards. Superior antennæ having the peduncle longer than the flagellum. Inferior antennæ more than half as long as the animal. Dactylos of the first pair of gnathopoda obtusely spatuliform, and sparsely covered with short reversed hairs. Three posterior pairs of pereiopoda having the meros cylindrical in each. Fourth segment of the pleon without a notch. Posterior pair of pleopoda not longer than the preceding.

Length $\frac{6}{20}$ths of an inch.

Hab. Naples (*Rev. Mr. Hope*).

12. ALIBROTUS.

Alibrotus, *Edwards, Hist. des Crust.* iii. p. 23.

Superior antennæ not large at the base, long and slender, furnished with a second appendage. Both pairs of gnathopoda largely developed and subchelate.

Milne-Edwards founded this genus to receive a species that he had previously referred to *Lysianassa*, from which it is distinguished by the length and slender form of the superior antennæ, and the greater size of the second pair of gnathopoda. I have seen no species of the genus.

1. Alibrotus Chauseicus.

Alibrotus chauseicus, *Edwards, Hist. des Crust.* t. iii. p. 23.
Lysianassa Chauseica, *Ann. Sci. Nat.* t. xx. p. 365.

Body elongated. Cephalon furnished with a small rostrum. Eyes small and circular. Superior antennæ scarcely passing the peduncle of the inferior.

Length ——?

"*Hab.* Isles of Chausay" (*Milne-Edwards*).

2. Alibrotus littoralis. (Plate XIV. fig. 7.)

Anonyx littoralis, *Kröyer, Voy. en Scand.* pl. 13. f. 1.

Superior antennæ one-third as long as the animal; the flagellum about four times as long as the peduncle. The inferior antennæ longer than the superior, the peduncle not reaching beyond the

peduncle of the superior. First pair of gnathopoda having the propodos short and narrow, that of the second pair of gnathopoda broad.

Length ——?

Hab. Greenland (*Kröyer*).

13. HYALE.

Hyale, *Rathke, Fauna der Krym, Mém. Acad. Imp. St. Pétersb.* iii. 1837, p. 378.

Superior antennæ nearly as long as the inferior. Gnathopoda subcheliform; the propodos of the second pair larger than of the first in the male, and subequal in the female. Three posterior pairs of pereiopoda subequal. Posterior pair of pleopoda short, double-branched. Telson simple.

Dana has arranged this genus in his subfamily Lysianassinæ. Not having seen a specimen, I adopt the same arrangement; but, judging from the figure of the author, I should be inclined to classify it near to *Nicea* of Nicolet, from which the female appears to differ only in the posterior pair of pleopoda having two branches—a feature that the author has not alluded to in the description of the animal, although exhibited in the figure. It is this character, together with the absence of any mention whether the mandibles are furnished with an appendage or not, that has precluded my placing it among the Orchestidæ.

1. Hyale Pontica. (Plate XIV. *a*. fig. 1.)

Hyale Pontica, *Rathke, Fauna der Krym*, p. 378. tab. 5. f. 20–28.
Dana, U. S. Explor. Exped. p. 910, note †.

Male.—Pereion compressed, imbricated. Eyes small and round. Superior antennæ nearly as long as the inferior. Inferior antennæ not reaching beyond the second segment of the pereion. First pair of gnathopoda small; second having the propodos large, the palm slightly oblique, ciliated, notched near the dactylos, and toothed at the inferior angle, where the apex of the dactylos impinges. Pereiopoda subequal, spinous. Coxæ of the third pair not more than half as deep as the preceding. Three posterior pairs of pleopoda having the peduncles much longer than their respective rami; the antepenultimate reaching to the extremity of the ultimate.

Female.—Differs from the male only in having the gnathopoda subequal.

Length ——?

Hab. Crimea (*Rathke*).

14. PHLIAS.

Phlias, *Guérin, Magasin de Zoologie*, 1836.
Edwards, Hist. des Crust. t. iii. p. 23.
Dana, U. S. Explor. Exped. p. 908.

"Body short, laterally compressed, composed of fourteen segments exclusive of the cephalon. Cephalon small, in great part covered by the first segment of the pereion. Eyes projecting. Superior antennæ large, having a stout peduncle composed of three articulations (the flagellum is destroyed, and there remains only the base; we see that there is no secondary appendage). Inferior antennæ very small, inserted beneath the preceding, composed of a peduncle and a short multiarticulate flagellum. Seven pairs of filiform legs, simple, monodactyle. The gnathopoda and first two pairs of pereiopoda subequal, shorter than the three posterior pairs of pereiopoda, which are also subequal. Three anterior pairs of pleopoda of the ordinary form; the fourth pair a little smaller, and composed of a peduncle and two little, oval and very short rami. Posterior pair of pleopoda having the peduncle very short, large and round, and terminating in two small, pointed, oval rami. Telson very short, transversal, and a little rounded."—*Guérin-Méneville.*

1. Phlias serratus. (Plate XIV.*a*. fig. 2.)

Phlias serratus, *Guérin, Magasin de Zoologie*, 1836, class vii. p. 19.

"All the segments are dorsally very pointed, which gives to the animal in profile a strongly dentate appearance. It is of an opaque yellow-brown colour.

"Length from 5 to 6 millimètres.

"M. Gaudichaud found this pretty little species during a passage from the Isle of Malouines to Port Jackson."—*Guérin-Méneville.*

2. Phlias Rissoanus, n. s. (Plate XIV.*a*. fig. 3.) B.M.

Cephalon small. Each segment of the pereion and three anterior segments of the pleon dorsally elevated into a strong, flat, obtuse-pointed tooth, and furnished on each side, near the anterior margin of each segment, with a strong tubercle. Eyes borne on elevated tubercles. Superior antennæ carrying a strong tubercle or blunt tooth near the apex of the first (?) articulation of the peduncle; flagellum not longer than the third joint of the peduncle. Inferior antennæ scarcely as long as the superior. Gnathopoda (imperfectly examined). Pereiopoda subequal, cylindrical, robust, carrying a short curved dactylos. Pleopoda (imperfectly examined).

Length rather more than $\frac{1}{20}$th of an inch.

Two very minute specimens were sent to me by my friend Mr. J. Gwyn Jeffreys, who took them on the shores of Piedmont. This species is named in honour of Risso.

15. URISTES.

Uristes, *Dana, U. S. Explor. Exped.* p. 917.

"Body compressed. Coxæ broad. Antennæ of moderate length; the superior with a stout base, not appendiculate. First pair of gnathopoda subcheliform; second vergiform, ending in a long styliform joint; third and fourth very short; the remaining similar, and of moderate length."—*Dana.*

The mandibles are described as having the incisive edge denticulated.

1. Uristes gigas. (Plate XIV. fig. 8.)

Uristes gigas, *Dana, U. S. Explor. Exped.* p. 917. pl. 62. f. 3.

"Antennæ subequal, rather stout, not half as long as the body; the superior pair having the flagellum very short-jointed, and fringed below with short obtuse processes; the inferior somewhat the longer, the flagellum having minute triangular processes along the upper margin. Eyes reniform. First pair of gnathopoda shorter than second; propodos of the first pair oblong; apex oblique; margins nearly parallel; dactylos short; second pair five-jointed*, the last joint long, styliform. The fifth pair of pereiopoda shorter than the fourth; antepenultimate segment of pleon acute behind.

"Length 9 lines.

"Taken from the stomach of a fish in the Antarctic Seas."—*Dana.*

Dana has placed his genus *Uristes* immediately next to *Opis*, forming with it a division in his subfamily Lysianassinæ, the peculiar characters of which are, that the first pair of gnathopoda are subchelate, the second simple. Kröyer's figure of *Opis* evidently represents the second pair of gnathopoda as formed upon the same type as in *Lysianassa* and *Anonyx*, and therefore is minutely subchelate. The author says that in *Uristes* it terminates in a long styliform propodos, the dactylos being wanting. It cannot be presumed but that so acute and able an observer as Dana must have described the genus accurately; but it is evident that in his figure the first pair of pereiopoda have been drawn for the second pair of gnathopoda. The gnathopoda are distinguished from the pereiopoda by having the propodos articulated with the carpus near the anterior margin, whereas in the pereiopoda it articulates nearer to the pos-

* The coxæ not counted. In the figure, Dana has drawn one of the first pair of pereiopoda instead of the second pair of gnathopoda. The meros *always* overrides the carpus in the pereiopoda, and underrides it in the gnathopoda.

terior margin, and consequently has greater motive power. This is undoubtedly the case with the leg drawn as the second gnathopod in the plate of Dana's fine work. In all other respects the animal more resembles the genus *Atylus* of Leach, than that of *Opis* of Kröyer. Not having seen the animal, it is but right to assume that the description is correct, though the figure is erroneous.

Subfamily 3. AMPELISCADES.

Ampeliscades, *Spence Bate, Ann. Nat. Hist.* vol. xx. p. 525, 1857.
Tetromatides, *Spence Bate, Brit. Assoc. Report,* 1855; *Synopsis, Ann. Nat. Hist.* Feb. 1857.

Cephalon produced anteriorly, cone-shaped, the superior antennæ being placed at the apex. No compound eyes, but four small simple organs of vision. Gnathopoda more or less subchelate, not powerful. Coxæ deep, as also those of the first two pairs of perciopoda.

The only genus that we yet recognize as fulfilling the conditions of this subfamily is so peculiar that it cannot be grouped in either of the other subfamilies. The general form of the body approaches it near to *Anonyx*; but the projecting cephalon and the posterior position of the inferior antennæ approximate it to the subfamily of the Phoxides, from which, again, it is distinguished by the form and unique character of the organs of vision. I therefore think it better to place it in a subfamily by itself, between Lysianassides and Phoxides.

16. AMPELISCA.

Ampelisca, *Kröyer, Nat. Tidskr.* 1 ser. iv. p. 154.
Spence Bate, Ann. Nat. Hist. ser. 2. vol. xx. p. 255.
Liljeborg, Ofvers. af Kongl. Vetensk. Akad. p. 22, 1851, p. 137, 1855.
Araneops, *Costa, Rend. del. Accad. del. Sc. di Nap.* p. 169, 1853.
Pseudophthalmus, *Stimpson, Marine Invert. Grand Manan.*
Tetromatus, *Spence Bate, Brit. Assoc. Report,* 1855; *Synopsis, Ann. Nat. Hist.* Feb. 1857.

Cephalon tapering anteriorly. Eyes four, minute, simple, situated near the anterior extremity of the cephalon. Superior antennæ simple, attached to the extremity of the cephalon. Inferior antennæ arising very far posterior to the base of the superior. Mandibles furnished with an appendage. Gnathopoda imperfectly subchelate. The first and second pairs of perciopoda terminating in a styliform dactylos longer than the propodos; third and fourth pairs terminating in a short curved dactylos directed posteriorly. Three posterior pairs of pleopoda biramose. Telson squamiform, cleft.

I anticipate, from the form of the head, that the animals of this genus are burrowers in soft mud, sand, &c.

1. Ampelisca Gaimardii. (Plate XV. fig. 1.)

Ampelisca Gaimardii, *Kröyer, Voyage en Scand.* pl. 23 *. f. 1.
Tetromatus typicus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 171. pl. 10. f. 4.
Araneops diadema, *A. Costa, Rend. del. Accad. Sc. Nap.* p. 171, 1853.

Cephalon and pereion laterally compressed and dorsally cuneated. Pleon compressed, but not cuneated; the posterior margin of the third segment plain; a slight dorsal sinus on the fourth. Eyes small and round, one above the other, situated near the base of the superior antennæ. Superior antennæ about one-third the length of the animal; the peduncle about half as long as the flagellum; the first joint of the peduncle short and stout, the second as long again and slight, the third not half as long; flagellum very slender and delicate, the first joint as long as the last of the peduncle, the inferior margin crowded with auditory cilia. Inferior antennæ long and slender, as long again as the superior; the last two joints of the peduncle subequal, reaching beyond the peduncle of the superior; flagellum very slender, more than twice as long as the peduncle. Maxillipeds having a long dactylos, short propodos, long carpus, and the meros furnished with a squamiform plate armed with six stout spines along the internal border. First pair of gnathopoda scarcely subchelate; propodos short, shorter than the carpus; palm not defined, slightly concave, furnished with several fasciculi of simple and ciliated hairs; dactylos short, unguiculate, armed upon the inner side with three or four short stout spines fringed with cilia. Second pair of gnathopoda like the first, but longer; the propodos much longer and the palm less perceptible. First and second pairs of perciopoda having the meros long and broad, ovate; carpus short; propodos long, slightly arcuate anteriorly, and each joint furnished with long ciliated hairs; dactylos long, longer than the propodos, styliform, slightly curved. Third and fourth pairs subequal, having the dactylos short, curved, directed backwards; propodos straight, armed anteriorly with a row of equidistant, solitary, blunt spines, each furnished near the tip with one fine cilium, and posteriorly with three somewhat similar ones; carpus broader than the propodos, and having the inferior extremity furnished with spines similar to those on the propodos. Posterior pair of perciopoda having the basos long, the ischium, meros, and carpus short; propodos as long again as the carpus; dactylos broad, flat, and lanceolate. Three posterior pairs of pleopoda styliform: the ante-

* By a misprint, the name on the plate is Ampelisia.

penultimate having one ramus clean, the other armed with a single row of short spines along the upper margin; penultimate having the rami shorter, and both armed at their margins with short spines; ultimate having both rami furnished near the extremity with short hairs, and one also along the inferior margin with short spines. Telson long, narrow, somewhat lanceolate, cleft up the median line.

Length $\frac{1}{2}\frac{4}{0}$ths of an inch.

This species was first taken by Kröyer, on the Scandinavian shores. The British specimens have been taken by the Rev. G. Gordon in the Moray Frith; off the island of Skye by Mr. G. Barlee; Kish-bank, Dublin Bay, by Prof. Kinahan; off Fowey by Mr. Wells, of the Admiralty Survey; and in Plymouth Sound it has been dredged by Mr. T. P. Smyth and myself. Costa procured the specimen which I believe to be this species upon the coast of Naples.

2. **Ampelisca ingens.** (Plate XV. fig. 2.) B.M.

Pseudophthalmus ingens, *Stimpson, MS.*

Anterior portion of the pereion laterally compressed and dorsally cuneated. Posterior margin of the third segment of the pleon slightly waved. Superior antennæ half as long as the inferior; peduncle nearly as long as the flagellum. Inferior antennæ half as long as the animal, having the ultimate joint of the peduncle half the length of the penultimate; the peduncle nearly as long as the flagellum. First pair of gnathopoda rather short, having the inferior angle of the propodos produced and rounded; palm short, straight, and ciliated, as also along the inferior margin of the propodos, carpus, meros, and ischium. Second pair of gnathopoda longer than the first, having the carpus cylindrical, as long again as the propodos; propodos having the inferior margin nearly parallel with the superior, slightly approaching at the distal extremity, having the palm not defined; dactylos impinging against the inferior margin. All the joints fringed along their inferior margins with fasciculi of hairs. The pereiopoda bear a close resemblance to those of *A. Gaimardii*; posterior pair having the rami equal, lanceolate, and naked.

Length $1\frac{1}{2}$ inch.

Hab. Grand Manan (*Stimpson*); Greenland, 40 fathoms (*Holböll*).

I am indebted for this species, among many others, to Mr. Stimpson; it was sent with a collection of specimens from Grand Manan, and labelled by the author, but it is not noticed in his Synopsis of the Marine Invertebrata of that island. I have therefore the authority of the author's MS. name only.

3. Ampelisca Belliana. (Plate XV. fig. 3.) B.M.

Tetromatus Bellianus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 171.

Anterior portion of the pereion laterally compressed and dorsally cuneated. Posterior margin of the third segment of the pleon ornate, being excavated near the upper surface, lobed near the middle, excavated below, and the inferior angle produced into a tooth, which is slightly turned upwards at the extremity. Superior antennæ not longer than the cephalon, having the flagellum nearly as long as the peduncle. Inferior antennæ about one-third the length of the body, having the peduncle longer than the superior antennæ; flagellum scarcely as long as the peduncle. Maxillipeds having a dactylos shorter than the propodos; propodos nearly as long as the carpus; meros furnished with a squamiform plate armed with eight broad, strong, lanceolate, and three apical hair-like spines upon the median border. Propodos of first pair of gnathopoda without a palm; second like the first, but longer. Posterior pair of pereiopoda having the lanceolate dactylos sharper than in *A. Gaimardii*. The three posterior pairs of pleopoda resemble those of *A. Gaimardii*, except that the ante- and penultimate pairs have the margins of their respective rami less regularly and numerously fringed with spines.

Length $\frac{11}{20}$ths of an inch.

Hab. N. Atlantic (*Barrett*); Moray Frith (*Rev. G. Gordon*); Banff (*Mr. Edward*); Plymouth Sound (*C. S. B.*).

4. Ampelisca limicola. (Plate XV. fig. 4.) B.M.

Pseudophthalmus limicola, *Stimpson, Mar. Inv. Grand Manan*, p. 57.

Female.—Anterior portion of pereion laterally compressed and dorsally cuneated. Superior antennæ scarcely reaching to the extremity of the peduncle of the inferior. Inferior antennæ about one-third the length of the animal. First pair of gnathopoda having the carpus and propodos subequal, cylindrical, without a palm; dactylos ciliated upon the inner side. Second pair of gnathopoda little longer than the first, having the carpus as long again as the propodos, fringed with fasciculi of hairs both upon the superior and inferior margins; dactylos ciliated upon the inner margin. Pereiopoda like those of *A. Gaimardii*, except that the dactylos of the posterior pair is not lanceolate, but styliform and curved. Posterior pair of pleopoda short, and fringed posteriorly with long plumose hairs.

Length $\frac{12}{20}$ths of an inch.

Hab. Charleston Harbour, South Carolina, U.S. Taken at low water living in holes in the soft mud (*Stimpson*).

For a specimen of this species I am indebted to the kindness of the discoverer.

5. Ampelisca Japonica. (Plate XV. fig. 5.) B.M.

Ampelisca Japonica, *Stimpson, MS.*

Anterior portion of the pereion laterally compressed and dorsally cuneated. Superior antennæ scarcely as long as the peduncle of the inferior. Inferior antennæ half as long as the animal; the penultimate and ultimate joints of the peduncle subequal; flagellum not longer than the peduncle. First pair of gnathopoda cylindrical, having the carpus longer than the propodos, fringed above and below with simple cilia. Second pair of gnathopoda cylindrical, having the carpus as long again as the propodos, and fringed below with simple cilia. Pereiopoda like those of *A. Gaimardii*; posterior pair having the dactylos unguiculate, curved. Posterior pair of pleopoda long, with styliform rami.

Length $\frac{7}{20}$ths of an inch.

Hab. Japan (*Stimpson*).

For a specimen of this species I am indebted to its author.

6. Ampelisca pelagica.

Pseudophthalmus pelagicus, *Stimpson, Marine Invert. Grand Manan,* p. 57.

"Inferior antennæ as long as the body; superior ones two-fifths as long as the inferior ones. Posterior pair of pereiopoda with few, stout, spine-like hairs. Antepenultimate and ultimate pairs of pleopoda projecting beyond the penultimate. Pleon sinuated above on the last three segments. Colour pale yellow, with a blotch of dark-red pigment on the cephalon.

"Length 0·4 of an inch.

"*Hab.* Long Island, Grand Manan, on a soft muddy bottom in 35–50 fathoms, and in Hake Bay in 30 fathoms sand."—*Stimpson.*

7. Ampelisca macrocephala.

Ampelisca macrocephala, *Liljeborg, Ofversigt af Kongl. Vet. Akad.* p. 7, 1852; *ibid.* 1855.

Ampelisca Eschrichti (?), *Kröyer, Liljeborg, Ofversigt af Kongl. Vet. Akad.* p. 22, 1851.

"Cephalon long, produced. Eyes four, very minute, almost spherical;

the inferior pair very distinct, and placed near the margin at the base of the superior antennæ, which are situated at the anterior extremity of the cephalon, and far in advance of the inferior; both pairs of antennæ are slight, the inferior longer than the superior. Body much compressed; the anterior portion, together with the cephalon, somewhat carinated; the posterior portion slightly angulated. Fourth segment of the pleon carinated; sixth posteriorly obtusely bidentate. Mandibles furnished with a triarticulate appendage. Maxillæ 4-articulated; second joint larger than the others; third ovate; fourth rudimentary, hairy. Maxillipeds having the larger foliaceous appendage upon the inner margin pectinated. Gnathopoda and first three pairs of pereiopoda having the form peculiar to the genus. Posterior pair of pereiopoda having the basos large, ovate, posteriorly dilated, and the inferior margin ciliated; dactylos not unguiculate, straight, thin, and flat. Posterior pair of pleopoda having the rami equal, lanceolate, and reaching beyond the preceding. Telson lanceolate, obtuse, cleft. Coxæ large. Posterior margin of the third segment of the pleon curved, and reflexed beneath into a prominent tooth. The female can be distinguished from the male by the superior antennæ being slighter and shorter. Colour in both sexes white and red, variegated. Cephalon with eyes red, as also the pereiopoda, including the coxæ.

"Length of the male about 20 lines, and therefore among the larger of our Amphipoda.

"*Hab.* Kullaberg, Norway."—*Liljeborg.*

The above is taken from Liljeborg's description; and but for the carinated and bidentated characters, which he has not alluded to in his description (*l. c.* 1855), of the fourth and sixth segments of the pleon, this species would appear to be identical with *A. Belliana*, particularly in the ornate character of the posterior margin of the third segment of the pleon.

8. Ampelisca brevicornis.

Araneops brevicornis, *Costa, Rend. del. Accad. del. Sc. di Napoli*, p. 171, 1853.

"Superior antennæ scarcely surpassing the penultimate joint of the peduncle of the inferior, and having the flagellum half as long again as the peduncle. Inferior antennæ having the last joint of the peduncle distinctly longer than the preceding; flagellum half as long as the peduncle.

"Length 5½ lines.

"*Hab.* Naples."—*Costa.*

9. Ampelisca tenuicornis.

Ampelisca tenuicornis, *Liljeborg, Ofversigt af Kongl. Vetensk. Akad. Forhandl.* 1855.

"*Male.*—Very like *A. macrocephala*, but having a posterior dorsal carina. Superior antennæ attached to the inferior lateral part of the cephalon; the second joint extending beyond the peduncle of the inferior antennæ, a little longer than the first; the third not distinct from the flagellum, which consists of about eleven joints. Inferior antennæ very long and slender, longer than the body; the ultimate and penultimate articulations of the peduncle nearly equal; flagellum consisting of about thirty-five indistinct joints. First pair of gnathopoda having the propodos and carpus nearly equal; second pair having the propodos twice as short as the carpus. First and second pairs of pereiopoda having the meros dilated, but those of the first pair a little the narrower. Posterior pair of pereiopoda having the carpus small; propodos very broad; dactylos thin and flat; apex short and unguiform. Posterior pair of pleopoda having the rami long, subulate, twice as long as the peduncle. Telson elongate, nearly linear.

"Length 6 lines.

"Rare; two specimens only having been taken, one with *A. lævigata*, and one with *A. macrocephala*.

"*Hab.* Kullaberg, Norway."—*Liljeborg.*

10. Ampelisca lævigata.

Ampelisca lævigata, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1855, p. 123.

"Body formed as in *A. macrocephala*; but the superior antennæ are at the extreme apex of the cephalon, and not latero-inferior; in the male the superior antennæ reaching beyond the peduncle of the inferior antennæ, with a flagellum consisting of about twenty joints, and distinct from the peduncle; in the female not attaining the second joint of the peduncle of the inferior antennæ; the third joint of the peduncle is not distinct from the flagellum, which consists of about seven joints. The inferior antennæ similar to those of *A. macrocephala*, but slighter and longer; in the female almost reaching the pleon, in the male nearly the length of the animal; third joint of the peduncle longer than the fourth; flagellum in the female consisting of about twenty-two joints, in the male of about fifty. Gnathopoda formed as usual. First and second pairs of pereiopoda having the meros more dilated than in *A. macrocephala*; posterior pair of pereiopoda having the carpus

and propodos wider. Pleon, except the fourth segment, slightly carinated or angulated dorsally. Telson narrower than in *A. macrocephala*, lanceolate. Posterior pair of pleopoda having the rami broader, lanceolate, the exterior being a little shorter than the interior, and tipped with coarse spines.

"Length about 12 lines.

"Taken with *A. macrocephala*, but more rare.

"*Hab.* Kullaberg, Norway."—*Liljeborg*.

Subfamily 4. PHOXIDES.

Pontoporeides, *Dana, U. S. Explor. Exped.* p. 912.
Spence Bate, Synopsis Brit. Amph., Ann. Nat. Hist. Feb. 1857.
Phoxides, *Spence Bate, Ann. Nat. Hist.* vol. xx. p. 525, 1857.

The cephalon is produced in advance, more like a hood than a rostrum. The superior antennæ are situated considerably in advance of the inferior. The integumentary structure is generally thin and semitransparent; and I am inclined to think that most of the genera are burrowers, for which purpose the hood-like cephalon affords an efficient protection. The three posterior pairs of pleopoda are double-branched.

17. PHOXUS.

Phoxus, *Kröyer, Tidskr.* vol. iv. p. 150.

Eyes not appreciable*. Superior antennæ with a complementary appendage; inferior antennæ as long as the superior. Mandible appendiculate. Maxillipeds subpediform. Both pairs of gnathopoda subchelate. Coxæ deeper than the respective segments. Posterior pair of pereiopoda shorter than the preceding. Telson double.

1. Phoxus simplex. (Plate XVI. fig. 1.) B.M.

Phoxus simplex, *Spence Bate, Ann. Nat. Hist.* vol. xx. p. 525, 1857.
Phoxus Kröyeri, *Spence Bate, Synopsis Brit. Amph., Ann. Nat. Hist.* Feb. 1857; *Brit. Assoc. Report*, 1855 (not *Stimpson*).
White, Hist. of Brit. Crust. p. 173.

Cephalon much produced anteriorly. Superior antennæ having the extremity of the flagellum not reaching beyond the anterior margin of the cephalon; the flagellum short, 3-jointed; secondary appendage longer than the primary, 4-jointed. Inferior antennæ as long again as the superior; the joints of the peduncle scarcely

* Having seen only dead specimens, this is but a doubtful diagnosis. In many species, where the eyes are not strongly marked, they disappear very shortly after death.

distinguishable from those of the flagellum. Four anterior pairs of coxæ deeper than their respective segments, the three anterior being furnished near the inferior margin with *four* simple hairs. First pair of gnathopoda having the propodos oblong quadrate; the inferior margin parallel with, and as long as, the superior: palm slightly convex; inferior angle produced into a small tooth. Second pair of gnathopoda larger than the first, having the propodos broader anteriorly, and the inferior angle produced into a blunt tooth; palm convex, fringed with short solitary hairs. Penultimate pair of pereiopoda longer than the one preceding; ultimate pair very much shorter, not longer than the basos is wide. Posterior pair of pleopoda scarcely reaching beyond the preceding.

Length $\frac{3}{20}$ths of an inch.

Hab. Dredged in Plymouth Sound (*C. S. B.*).

2. Phoxus Holbölli. (Plate XVI. fig. 2.)

Phoxus Holbölli, *Kröyer, Tidskr.* vol. iv. p. 150.
Spence Bate, Synopsis Brit. Amph., Ann. Nat. Hist. Feb. 1857.
White, Hist. Brit. Crust. p. 173.

Eyes not appreciable. Superior antennæ having the peduncle reaching to the anterior margin of the cephalon; flagellum as long as the peduncle, 7-jointed, each joint longer than broad; secondary appendage half as long as the primary. Inferior antennæ scarcely longer than the superior; flagellum easily distinguished from the peduncle; joints of the flagellum broader than long near the base, and much longer than broad near the extremity. Maxillipeds having a small squamiform plate arising from the ischium and basos. First pair of gnathopoda having the palm of the propodos convex, oblique, fringed with solitary hairs; the inferior angle produced into a sharp tooth. Second pair of gnathopoda scarcely larger than the first, which it resembles, except that the palm is not quite so oblique. Coxæ of both pairs of gnathopoda and first pair of pereiopoda each furnished with *five* simple hairs. Two anterior pairs of pereiopoda having the dactylos short, and the extremity of the propodos furnished with two short spines, each with a subapical cilium. Penultimate pair of pereiopoda one-third longer than the preceding; ultimate one-half shorter, being scarcely as long as the basos is wide. Posterior pair of pleopoda longer than the two preceding pairs.

Length $\frac{1}{4}$ of an inch.

Hab. Banff (*Mr. Edward*). Dredged in Plymouth Sound (*C. S. B.*).

3. Phoxus plumosus. (Plate XVI. fig. 3.)

Phoxus plumosus, *Kröyer, Tidskr.* vol. iv. p. 150.
Spence Bate, Synops. Brit. Amph., Ann. Nat. Hist. Feb. 1857; *Report Brit. Assoc.* 1855.
White, Hist. of Brit. Crust. p. 173.
Phoxus fusiformis, *Stimpson, Mar. Invert. Grand Manan*, p. 57.

The anterior portion of the cephalon more obtuse than in *P. Holbölli*. Superior antennæ long, the peduncle reaching considerably beyond the rostrum; flagellum subequal, not longer than the peduncle: first segment of the peduncle very long and broad; second narrow, being narrower at the posterior than at the anterior extremity; third still narrower and scarcely as long: the inferior margin of each joint is fringed with long and strong hairs, which spread themselves as from a common centre; those on the basal segment are biarticulate and brushlike. The inferior antennæ are scarcely as long as the superior; the penultimate joint of the peduncle is longer than either of the others, and is developed inferiorly into an extended squamiform process fringed with plumose cilia, as is also the anterior margin of the same joint; flagellum shorter than the peduncle, with the first joint as long as two or three of the succeeding. First pair of gnathopoda having the propodos tapering; palm oblique. Second pair somewhat smaller than the first. Perciopoda having the dactylos quite as long as the propodos, and the lateral spines (which appear to be moveable), originating at the extremity of the propodos, as long as the dactylos, against which they appear to have the power of being compressed into a corresponding groove on each side. Coxæ of the gnathopoda and two anterior pairs of perciopoda as deep as the body of the animal, the inferior margin of each being fringed with a single row of *plumose* hairs. Third pair of perciopoda having the basos not developed into a squamiform plate; fourth pair having the basos but slightly so, and the entire limb considerably produced in length; the dactylos as long as the propodos, with its extremity styliform. Fifth pair having the basos largely developed into a squamiform plate, somewhat oval in form and pointed at the lower extremity, and serrated along the posterior margin; from the intermediate depressions arises a small cilium; the dactylos long, straight and slender, reaching but little beyond the width of the squamiform basos. The pleopoda terminate subequally. Telson double, not so long as the peduncle of the posterior pleopoda. Colour corneous and transparent. Hairs upon the animal generally plumose. The structure of the tissue under the microscope is minutely granular. Length about $\frac{4}{10}$ths of an inch.

Hab. Greenland (*Holböll*); dredged in Plymouth Sound (*C. S. B.*); Shetland (*Mr. G. Barlee*); "Grand Manan, U.S., North America, dredged on coarse sandy bottoms in the Laminarian and Coralline zones" (*Stimpson*).

I have not seen Kröyer's type of this or the preceding species. In his descriptions, he states that a few spines exist upon the third and fourth articulations of the peduncle of the inferior pair of antennæ in *P. Holbölli*, and that such spines are absent in *P. plumosus*. In the specimens from which our figure and description are taken, the few hairs upon the inferior antennæ in *P. Holbölli* can scarcely be termed spines; whereas in *P. plumosus* there are plumose hairs, of which Kröyer makes no special mention. In other respects the animals agree with Kröyer's descriptions, and therefore I do not feel justified in separating them upon such immaterial differences.

The only distinction between *P. plumosus* and *P. fusiformis*, according to Stimpson, consists in the latter having "more nails [spines] on the third and fourth legs than *P. plumosus*," Kr.

Stimpson states the eyes to be white.

4. Phoxus geniculatus.

Phoxus geniculatus, *Stimpson, Proc. Acad. Nat. Sc. U. S.* May and June 1855.

"Rostrum very long, pointed. Eyes white. Superior antennæ biflagellate; flagella equal, 10-articulate. Members with simple hairs. The meros and carpus of the first and second pairs of perciopoda dilated; rami of the posterior caudal stylets unequal, the outer ones long, three-jointed. Colour white.

"Length $\frac{1}{4}$ of an inch.

"*Hab.* Japan."—*Stimpson.*

5. Phoxus obtusus.

Phoxus obtusus, *Stimpson, Proc. Acad. Nat. Sc. U. S.* May and June 1855.

"Rostrum short, concave, its extremity rounded. Appendicula of the superior antennæ very short. Gnathopoda and first two pairs of perciopoda slender, the latter with unexpanded joints and spinous extremities; hairs simple, except on the third pair of perciopoda, where they are long and plumose; last pair of pleopoda with flattened lanceolate rami, the external ones the longest. Telson consisting of two lamelliform processes, emarginate at the extremities.

"Length $\frac{1}{4}$ of an inch.

"*Hab.* Japan."—*Stimpson.*

6. Phoxus Kröyeri.

Phoxus Kröyeri, *Stimpson, Marine Invert. Grand Manan*, p. 58.

"Larger and thicker than *P. plumosus*; glabrous above, and of a pale-red colour, with the eyes white. The antennæ, legs, and coxæ are very hairy, but the hairs are simple instead of plumose. Superior antennæ shorter and more slender than the inferior ones. Mandibles with an appendage almost as long as the superior antennæ. First pair of gnathopoda with the propodos more elongated than in *P. plumosus*; penultimate pair of pereiopoda not so long in proportion; the two anterior pairs of pereiopoda having a simple dactylos. Telson consisting of two sharp spines.

"Length 0·3 inch.

"Taken at low-water mark, on a sandy shore, at High Duck Island."—*Stimpson.*

18. GRAYIA, n. g.

Cephalon produced, hood-shaped. Eyes two. Superior antennæ not appendiculate. Gnathopoda subchelate. Pereiopoda subequal, and terminating in a sharp-pointed curved dactylos. Posterior pleopoda biramous. Telson squamiform, entire?

This genus differs from *Œdicerus* of Kröyer in having two eyes, and in the fifth pair of pereiopoda not being longer than the preceding.

It is named in compliment to the Keeper of the Zoological Collections of the British Museum.

1. Grayia imbricata, n. s. (Plate XVI. fig. 4.) B.M.

Three anterior segments of the pleon posteriorly elevated, giving the animal an imbricated appearance; posterior margin of the third segment waved. Eyes round, black. Superior antennæ a little longer than the inferior. Coxæ small. Gnathopoda subequal. Pereiopoda subequal. Three posterior pairs of pleopoda subequal.

Length about $\frac{4}{20}$ths of an inch.

Hab. Falmouth? (*Mr. W. Webster*).

2. Grayia Pugettensis. (Plate XIV. *a*. fig. 4.)

Iphimedia Pugettensis, *Dana, U. S. Explor. Exped.* p. 932. pl. 63. f. 6.

"Eyes hardly reniform. Propodos of second pair of gnathopoda of moderate size, elongato-ovate, subacute at apex, below and above nearly equally arcuate, below hirsute; dactylos long; carpus about one-third as long as the propodos, below rather narrow, obtuse and hirsute; meros narrow, triangularly produced behind. Fifth pair of pereiopoda slender; setæ few, short. Caudal stylets long, first

and second pairs reaching backwards beyond the third; branches of first pair having five rather distinct setæ above.

"Length 3 lines.

"*Hab.* Puget's Sound."—*Dana.*

19. WESTWOODILLA.

Westwoodia, *Spence Bate, Brit. Assoc. Report,* 1855; *Synops. Ann. Nat. Hist.* Feb. 1857.

Cephalon produced, depressed. Eyes united. Superior antennæ without appendage. Mandibles appendiculated. First pair of gnathopoda subchelate, second not subchelate. Posterior pair of pereiopoda much longer than the preceding; dactylos long, straight, and styliform. Posterior pair of pleopoda biramous. Telson squamiform.

Westwoodia having been already adopted by Dana for a genus of Entomostracous Crustacea, I have felt obliged to alter the termination of the name of this genus, which I have designated in honour of one of the most eminent of European entomologists.

1. Westwoodilla cæcula. (Plate XVI. fig. 5.)

Westwoodia cæcula, *Spence Bate, Brit. Assoc. Report,* 1855; *Synops. Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 172.

Eyes converging into a single organ, situated above and in advance of the superior antennæ. Superior antennæ having the peduncle as long again as the flagellum. Inferior antennæ scarcely longer than the superior, having the peduncle as long again as the flagellum. Mandibles having the incisive margin edentulous; secondary plate similar. First pair of gnathopoda having the propodos long ovate, narrow; palm nearly the length of the inferior margin, fringed with cilia; carpus having the inferior distal angle produced. Second pair of gnathopoda having the distal half of the superior margin forming an obtuse angle with the anterior half, and supplied with a thick brush of hairs. Two anterior pairs of pereiopoda small, short, having a long, slightly curved dactylos. Coxæ of the third pair of pereiopoda unequally divided; anterior lobe nearly as deep as the preceding coxæ. Fifth pair of pereiopoda one-third as long again as the fourth. Posterior pair of pleopoda having the rami lanceolate. Telson concave above, round at the extremity.

Length $\frac{4}{20}$ths of an inch.

Hab. Moray Frith (*Rev. G. Gordon*); Banff, *Mr. Edward.* At Plymouth I have found it among trawl-refuse.

The body of the animal is covered with a short fur, increasing in quantity posteriorly; it is formed by a number of minute triangular blades, the sharp extremities pointing outwards; beneath this the microscope shows a series of double semicircles, somewhat like circular scales overlapping each other, the centre of each being marked by a distinct spot or nucleus.

2. **Westwoodilla hyalina**, n. s. (Plate XVII. fig. 5.) B.M.

Eyes prominent. Superior antennæ scarcely longer than the peduncle of the inferior. In all other respects the animal resembles *W. cæcula*, except in the microscopic appearance and structure of the integument. The fur that covers the body is finer, and the central spot or nucleus to each cellular marking is wanting. It may be but a sexual variety.

Length $\frac{6}{20}$ths of an inch.

Hab. Taken by trawlers near the Eddystone, among the branches of zoophytes (*C. S. B.*).

20. ŒDICERUS.

Œdiceros, *Kröyer, Tidskr.* iv. p. 146, 1842–3.
Œdicerus, *Dana, U. S. Explor. Exped.* p. 933.

"Cephalon produced anteriorly into a rostrum more or less acute than obtuse, but always transparent, turgid, yellowish red, oval. Eyes none? Peduncles of the antennæ long, equalling or surpassing in length the flagellum of the superior. Superior antennæ not appendiculated. Both pairs of gnathopoda subchelate, very large. First two pairs of perciopoda strong; fifth pair of perciopoda very long, slight, almost filiform (except the basos). Coxæ moderately large, broad and deep, armed upon the inferior margins with simple hairs. Posterior margin of the fourth pair not excavated." —*Kröyer.*

Œdicerus differs from *Grayia* in the length and form of the posterior pair of perciopoda, and from *Westwoodilla* in having the second pair of gnathopoda subchelate; and if *Œdicerus Novæ-Zealandiæ* belong to this genus, in the form of the eyes also. I have seen no typical species of the genus. Kröyer's description, except that the produced carpus is not mentioned, so nearly agrees with the genus *Monoculodes*, that I am inclined, from the relative position of the antennæ, to think *Œ. Novæ-Zealandiæ* does not belong to it; but, not having seen a specimen, I have thought it preferable that, for the present, it should remain in the genus assigned it by its original describer.

1. **Œdicerus saginatus.**

Œdiceros saginatus, *Kröyer, Tidskr.* ser. 1. iv. p. 156, 1842–3.

"White mottled with brown. Percion broad, distended; back wide.

smooth. Third joint of the peduncle of the superior antennæ half shorter than the second; fourth (? fifth) joint of the peduncle of the inferior antennæ much longer than the third.

"Length 8–9 lines.

"*Hab.* From Greenland to the shores of Norway."—*Kröyer.*

2. Œdicerus Novæ-Zealandiæ. (Plate XVII. fig. 1.)

Œdicerus Novi-Zealandiæ, *Dana, U. S. Explor. Exped.* p. 934. pl. 63. f. 7.

"Superior antennæ not half as long as the body, terete. Inferior pair nearly twice as long; base twice as long as base of superior; flagellum about 21-jointed, twice as long as base; setæ very short. Fifth pair of pereiopoda as long as body, styliform at extremity. Gnathopoda unequal, similar; propodos of first pair smallest; of second pair of moderate size, broad subovate, nearly naked, obliquely truncate; palm oblique, very slightly excavate, or nearly straight. Three posterior pairs of pereiopoda having the basos rather narrow.

"Length 2 lines.

"*Hab.* Bay of Islands, New Zealand, in small pools on the rocky shores near Cororatika. Collected March 1840."—*Dana.*

The figure of this species does not exhibit the generic character of the anteriorly produced cephalon; but in all other respects it agrees, except perhaps the eyes. *Grayia Pugettensis* may belong to this genus (certainly not to *Iphimedia*); my only doubt rests upon the length of the fifth pair of pereiopoda.

21. MONOCULODES.

Monoculodes, *Stimpson, Marine Invert. of Grand Manan*, p. 54.
Kröyera, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Cephalon produced and depressed anteriorly. Eyes coalesced into one, situated above and anterior to the superior antennæ. Superior antennæ not appendiculated. Gnathopoda subchelate, having the carpus produced along the inferior margin of the propodos, so as to meet the apex of the dactylos. Posterior pair of pereiopoda much longer than the others. Posterior pair of pleopoda biramous. Telson squamiform, entire.

1. Monoculodes carinatus. (Plate XVII. fig. 2.) B.M.

Westwoodia carinata, *Spence Bate, Brit. Assoc. Report*, 1855.
Kröyera carinata, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 173.

Cephalon depressed anteriorly and incurved. Two posterior segments of the pereion and three anterior of the pleon strongly carinated. Eyes large, oval, red, situated above and in advance of the superior

antennæ. Superior antennæ not longer than the peduncle of the inferior. Inferior antennæ having the last joint of the peduncle longer than the two preceding, and as long as the flagellum of either pair of antennæ. First pair of gnathopoda having the propodos oval; palm oblique, convex, defined by a single strong spine, and fringed with a single row of short hooked spines and a few fasciculi of hairs of uneven length; carpus produced and broadly dilated. Second pair of gnathopoda having the propodos long and moderately broad; palm oblique, rounded, and fringed with a few spines; carpus as long as the propodos, and sparsely ciliated. First two pairs of pereiopoda alike, having the propodos dilated anteriorly at the distal extremity and furnished with a brush of cilia. Third and fourth pairs of pereiopoda alike; coxæ as deep as the preceding, those of the third pair of pereiopoda being subequally bilobed; in both, the basos is oval, and fringed with a few long plumose cilia; the meros posteriorly produced; the dactylos short and posteriorly directed. Posterior pair as long again as the preceding, and terminating in a long styliform dactylos. Three posterior pairs of pleopoda subequal, clean. Telson lanceolate.

Length half an inch.

Hab. Banff (*Mr. Edward*). Taken from a haddock's stomach in from 30 to 40 fathoms near Banff (*Mr. Gregor*).

When placed under the microscope, the surface of the integument upon the pereion is covered with minute and distant scales, which gradually increase and approach each other until they assume their maximum upon the anterior portion of the pleon, and again gradually decrease towards the posterior extremity of the animal.

2. **Monoculodes Stimpsoni**, n. sp. (Plate XVII. fig. 3.) B.M.

Cephalon anteriorly depressed, not incurved. Pleon not carinated. Superior antennæ..... Inferior antennæ having the last joint of the peduncle not longer than the preceding. First pair of gnathopoda..... Second pair of gnathopoda having the palm more oblique than in the preceding species. First two pairs of pereiopoda alike, having the dactylos rudimentary, lost in the brush at the extremity of the propodos; third and fourth pairs having their coxæ not so deep as the preceding. Three posterior pairs of pleopoda subequal.

Length about $\frac{6}{20}$ths of an inch.

Hab. Plymouth (*C. S. B.*).

The above description and the figure are taken from an imperfect specimen, though enough remains to establish its distinctness from the last species.

3. Monoculodes demissus.

Monoculodes demissus, *Stimpson, Marine Invert. of Grand Manan*, p. 54.

"Body smooth and shining, broad and thick anteriorly, and slender posteriorly. Pleon constituting more than three-sevenths of the total length. Coxæ of the first five pairs of considerable size; the rest very small. Head tumid, terminating anteriorly in a large subtriangular rostrum curving downwards, at the base of which, above, are the large vermilion-coloured eyes, which are so near together as to appear one, even when viewed from above. Antennæ thick-based, and about equal in length, reaching the fourth segment of the pereion; the superior ones with a much longer flagellum than the subpediform inferior ones. Both pairs of gnathopoda having the propodos oval; dactylos strong; carpus produced, so as to antagonize with the extremity of the dactylos; the second pair the larger. Perciopoda simply unguiculate; third and fourth pairs very short, fifth of great length. Three pairs of posterior pleopoda nearly smooth, of considerable length, tapering to fine points, the antepenultimate pair reaching to the extremity of the ultimate. Colour wine-yellow.

"Length 0·35 inch.

"*Hab.* Dredged in four fathoms, on a coarse sand and nullipore bottom, off Duck Island boat-moorings."—*Stimpson.*

22. KRÖYERA.

Kröyera, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Cephalon produced and anteriorly depressed. Eyes not coalesced into one. Superior antennæ not appendiculate. First pair of gnathopoda subchelate; carpus inferiorly produced along the inferior margin of the propodos. Second pair chelate; carpus produced along the inferior margin of the propodos. Fifth pair of perciopoda considerably longer than the preceding. Posterior pair of pleopoda biramous. Telson squamiform, entire.

This genus is named in honour of the distinguished Danish naturalist.

1. Kröyera arenaria. (Plate XVII. fig. 4.) B.M.

Kröyera arenaria, *Spence Bate, Tyneside Nat. Field Club*, vol. iv. pt. 1. p. 15. pl. 2. fig. 1.

Eyes round. Inferior antennæ one-fourth longer than the superior. First pair of gnathopoda having the propodos subchelate, ovate; palm oblique; carpus produced, so as to meet the extremity of the

dactylos. Second pair of gnathopoda chelate; propodos long and narrow, cylindrical; carpus produced one-fourth beyond the extremity of the dactylos, and enlarged at the apex. Two anterior pairs of pereiopoda subequal, having the dactylos minute; the anterior distal extremity of the propodos furnished with a brush of hairs. Third and fourth subequal, having the basos oval; the meros posteriorly and distally dilated and produced; carpus posteriorly and distally produced; dactylos short; distal posterior extremity of the propodos furnished with a brush of hairs. Posterior pair of pereiopoda as long again as the preceding; basos narrower; meros not so dilated nor produced; carpus not produced; dactylos long, straight, fringed with hairs, and tipped with one long and straight spine. Posterior pair of pleopoda not so long as the preceding; rami equal. Telson concave above, and fringed with hair.

Length $\frac{2}{20}$ths of an inch.

Hab. Sandy shore near Sunderland (*Mr. A. Hancock*), where it was observed to make peculiar furrows, which have been described and figured by its discoverer in a paper "On certain Vermiform Fossils," &c., Ann. Nat. Hist. Dec. 1858, and Tyneside Nat. Field Club, vol. iv. pt. 1. p. 17. pl. 4: also Cumbrae, near Glasgow (*Mr. Robertson*).

23. AMPHILOCHUS, n. g.

Cephalon produced, anteriorly depressed. Eyes two, posterior to the superior antennæ. Superior antennæ not appendiculated. Gnathopoda subchelate; in both, the carpus is inferiorly produced. Pereiopoda subequal; coxæ of the third pair not so deep as the preceding. Posterior pair of pleopoda double-branched (?). Telson single.

This genus is distinguished from *Monoculodes* by having two eyes situated laterally, from *Kröyera* by having the second pair of gnathopoda not chelate, and from both by the shortness of the posterior pair of pereiopoda.

1. Amphilochus manudens, n. s. (Plate XVII. fig. 6.) B.M.

Cephalon anteriorly depressed, not incurved. Eyes round. Superior antennæ longer than the inferior; peduncle longer than the flagellum. Inferior antennæ having the peduncle nearly as long as the peduncle of the superior; flagellum scarcely longer than the last joint of the peduncle. First pair of gnathopoda having the propodos long, narrow, tapering; superior edge produced anteriorly beyond the articulation of the dactylos in the form of a tooth:

palm, including the whole of the inferior margin, minutely ciliated, straight, nearly parallel with the superior margin; carpus produced, pointed, antagonizing with the extremity of the dactylos; dactylos arched, bent at the extremity. Second pair of gnathopoda having the propodos gradually widening towards the palm; superior margin anteriorly produced into a tooth beyond the articulation with the dactylos; palm oblique, imperfectly serrated; inferior angle rounded; inferior margin straight; carpus inferiorly produced, its apex antagonizing with the extremity of the dactylos. Pereiopoda subequal in length; posterior pair having the basos ovate; posterior margin serrated. Three posterior pairs of pleopoda subequal. Telson lanceolate. Colour claret-red.

Length $\frac{2}{20}$ths of an inch.

Hab. From roots of Laminaria in a few fathoms water, Cumbrae, N. B. (*Mr. Robertson*).

24. DARWINIA.

Darwinia, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Cephalon produced. Pereion not compressed. Eyes two. Superior antennæ without a secondary appendage. Inferior antennæ not so robust as the superior. Mandibles with an appendage. Gnathopoda subchelate. Pereiopoda strong, equal, having the dactylos sharp, curved, and powerful. Three posterior pairs of pleopoda biramous, styliform. Telson single, entire, squamiform.

This figure is named after the distinguished author of the Monograph of the Cirripedia.

1. Darwinia compressa. (Plate XVII. fig. 7.) B.M.

Darwinia compressa, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 176.

Cephalon produced into a short, obtuse, flat rostrum. Pereion broad and smooth. Third segment of the pleon not so deep as the preceding; three posterior segments suddenly narrower, and reflected closely beneath the three preceding. Eyes round. Superior antennæ longer than the inferior, having the peduncle nearly as long as the flagellum. Inferior antennæ reaching a little beyond the peduncle of the superior. First pair of gnathopoda very small, scarcely subchelate, having the superior and inferior margins of the propodos nearly parallel; palm not defined, furnished with a few short hairs; dactylos long, and scarcely

curved. Second pair of gnathopoda a little larger than the first, having the propodos scarcely as long as the carpus; palm straight, at right angles with the superior and inferior margins; dactylos furnished with a tooth upon the concave surface. Two anterior pairs of pereiopoda stout and powerful; coxæ deeper than the preceding, and developed inferiorly to an angle, the second being deeper than the first; the rest of the joints cylindrical; meros and carpus short; propodos longer; dactylos long, sharp, strong, clean, curved. Three posterior pairs of pereiopoda having the coxæ produced deeper posteriorly than anteriorly; basos dilated, ovate, inferiorly produced to cover the ischium; meros slightly dilated; carpus and propodos cylindrical; propodos not much longer than the carpus, and furnished anteriorly with a few spines; dactylos like the preceding. Three posterior pairs of pleopoda subequal, clean. Telson lanceolate.

Length $\frac{1}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*); Macduff (*Mr. Gregor*); Polperro (*Mr. Loughrin*).

The colour of the specimens that were sent to me from Scotland was dark brown, those from Polperro paper-white; these latter have also since become brown; hence we may assume white to be their natural colour. The specimens sent to me by Mr. Loughrin were also thickly covered by a species of *Vorticella*, a circumstance that denotes at least a peculiar habitat. I received them in the same bottle with some parasitic Crustacea taken from the throat of the Cod and skin of the Picked Dog-fish; but, as Mr. Loughrin made no special note of these, I am not prepared to affirm whether or not they are parasitic. The form of the dactylos of each pair of pereiopoda bears a strong resemblance to that of parasitic *Isopoda*, and must be very efficient for hooking-on to the skin of any animal; but it is difficult to suppose that the delicate *Vorticella* could remain attached either in the throat or upon the external surface of a fast-swimming fish.

25. LAFYSTIUS.

Lafystius, *Kröyer, Tidskr.* 1 ser. vol. iv. p. 156, 1842.

"Cephalon depressed, produced, broader than long. Antennæ rather short, subulate, strong (superior the stronger); peduncle and flagellum about equal in length, placed beneath the rostrum in the same plane, one before the other. Eyes situated dorsally on the surface of the cephalon. Mandibles narrow, pointed, furnished with an appendage. Maxillipeds with a biarticulate palpus. Thorax broad, depressed. First pair of gnathopoda slender; propodos linear; dactylos long. Second pair of gnathopoda short, strong; propodos quadrate; dactylos sublaminar, apex setose.

Perciopoda strong, subchelifform, subequal; coxæ moderate; fourth pair produced inferiorly into a point. Three anterior pairs of pleopoda elongate; three posterior pairs feeble."—*Kröyer*. "Telson single, squamiform, entire."—*Liljeborg*.

1. Lafystius Sturionis.

Lafystius Sturionis, *Kröyer, Nat. Tidskr.* 1 ser. vol. iv. p. 156.
Liljeborg, Ofvers. af Kongl. Vetensk. Akad. Forhandl. 1855.

"Body depressed. Dactylos on each of the perciopoda powerful, long, strong, arcuate, sharp, very similar to those in *Felina* among mammals, and resembling strongly those of the parasitic Isopods, especially in the erratic Cymothoëdians. Superior antennæ unusually thick, scarcely reaching to the fourth segment of the pereion; peduncle and flagellum about equal in length, the latter consisting of about nine rapidly decreasing joints. Inferior antennæ placed beneath and behind the superior, much smaller, but not much shorter; last joint of the peduncle longer than the rest; flagellum consisting of about seven joints. Mandibular appendage large, triarticulate, last joint aculeate. Propodos of the second pair of gnathopoda nearly oblong-ovate; dactylos scarcely unguiform, minute, lamellose, arcuate, apex setiferous. Pleon suddenly narrower posteriorly. Three posterior pairs of pleopoda large, and formed for leaping (?); last pair having lamellose rami, concave above, subulate, exterior the smaller, both longer than the peduncle. Telson not divided, lamellose, small, round-ovate.

"Length of the largest specimen about 7 millimetres by $2\frac{1}{2}$ broad.

"Colour white. Eyes round, black.

"The males are much smaller than the females, and have the propodos of the second pair of gnathopoda thicker and shorter; in other respects they resemble each other."—*Liljeborg*.

Hab. In crowds behind the first pectoral fin of *Acipenser Sturio*, and more rarely from *Squalus galeus*.—*Kröyer*. In a similar position on *Gadus morrhua*, near Kullaberg.—*Liljeborg*.

26. GUERINIA.

Guerinia, *Hope, Fauna of Naples* (*three new Crustacea*).

Cephalon but slightly produced, anteriorly depressed. Eyes convergent, coalescent (?). Superior antennæ appendiculate. Coxæ not so deep as their respective segments. First pair of gnathopoda subchelate. Second not subchelate; dactylos spatuliform. Posterior pairs of pleopoda biramous. Telson single, squamiform.

1. Guerinia Nicæensis. (Plate XIV. *a*. fig. 5.)

Guerinia Nicæensis, *Hope, Fauna of Naples* (*three new Crustacea*).

Cephalon produced to a point. Eyes large, occupying nearly the whole of the cephalon. Superior antennæ reaching but little beyond the peduncle of the inferior. Inferior antennæ one-third the length of the animal. First pair of gnathopoda having the propodos very large, quadrate; palm scarcely convex, evenly serrated; dactylos curved, large and powerful. Second pair of gnathopoda feeble, slender, having the propodos very small; dactylos triangular, dilated, compressed, flattened at the apex, and fringed with long hairs. Perciopoda subequal. Three posterior pairs of pleopoda subequal, rami uniform. Telson nearly circular.

Hab. Taken on fish off the coast of Naples (*Hope*).

For the description of this animal I am dependent upon the accuracy of the Rev. Mr. Hope's figure in the pamphlet quoted.

27. LEPIDACTYLIS.

Lepidactylis, *Say, Proc. Phil. Acad.* vol. i. part 2.
Dana, U. S. Explor. Exped. p. 912.

Cephalon subquadrate, short, produced into a short acute rostrum. Eyes convex, touching the anterior edge of the cephalon. Antennæ subequal: superior having the flagellum not longer than the last joint of the peduncle: inferior rather longer than the superior, incurved; fourth and fifth joints of the peduncle dilated inferiorly, compressed, furnished with elongated plumose cilia; these two joints when at rest form a continuous oval; the former is dolabriform. Gnathopoda simple, filiform, equal. First and second pairs of perciopoda equal, *didactyle*; *hand compressed, not dilated*; *finger* rounded; *thumb* oval, lamelliform: remaining perciopoda gradually larger, compressed, armed with short spines, and destitute of a dactylos: posterior pair largest; meros lengthened above, and nearly attaining the tip of the carpus, which is crenated and spinous on the edge; propodos compressed, serrated and spinous on the edge and truncate at tip. Pleon abruptly narrower than the pereion.

Few authors have suffered more from the want of a uniform system of names in describing Crustacea than Professor Say. This genus has been passed over by authors in consequence of the description not conveying a clear idea of the form. In the foregoing I have been obliged to retain Say's expressions of finger and thumb, because I cannot with certainty identify their homologues. I am inclined to

think the genus to be very closely allied to, if not synonymous with, *Sulcator*, in which case the finger is the homologue of the propodos, and the thumb is formed by the inferior portion of the produced and dilated carpus. In this I am confirmed by the "remaining feet" being destitute of a dactylos (nail).

1. Lepidactylis ditiscus.

Lepidactylis ditiscus, *Say, Proc. Philad. Acad.* vol. i. pt. 2.

"*Male*.—Eyes orbicular. Body white. Superior antennæ having the secondary appendage attaining the tip of the fourth joint of the flagellum. First pair of gnathopoda hairy.

"Length: male $\frac{1}{4}$, female $\frac{3}{20}$ths of an inch.

"*Hab.* Georgia, U.S."—*Say*.

28. SULCATOR.

Sulcator, *Spence Bate, Ann. Nat. Hist.* vol. xiii. p. 504, 1854.
Bellia, *Spence Bate, Ann. Nat. Hist.* vol. vii. p. 318, 1851.

Cephalon produced anteriorly. Pleon having the three posterior segments bent beneath and enclosed within the third. Superior antennæ with a secondary appendage. Coxæ large. Gnathopoda scarcely subchelate, having the dactylos small in the first and rudimentary in the second. Pereiopoda having the dactylos obsolete. Two anterior pairs of pereiopoda having the carpus and propodos dilated; three anterior pairs of pleopoda short; posterior pair of pleopoda biramous. Telson single, deeply divided.

1. Sulcator arenarius. (Plate XVIII.) B.M.

Sulcator arenarius, *Spence Bate, Ann. Nat. Hist.* 1854; *Report Brit. Assoc.* 1855; *Synops. Ann. Nat. Hist.* Feb. 1857; *Trans. Tyneside Nat. Field Club*, vol. iv. pt. 1. p. 15. pl. 2. f. 2, 1858.
Gosse, Marine Zoology, p. 142. f. 264.
White, Hist. of Brit. Crust. p. 174.
Bellia arenaria, *Spence Bate, Ann. Nat. Hist.* vol. vii. p. 318, 1851.
Dana, U.S. Explor. Exped. Crust. p. 912.

Cephalon produced into a small flat rostrum. Pereion smooth; third segment of the pleon longer than the preceding; the three posterior segments reflexed, and enclosed beneath the third. Eyes small, round, cream-coloured. Superior antennæ having the peduncle longer than the flagellum; secondary appendage nearly as long as the primary; peduncle studded with plumose cilia. Inferior antennæ having the fourth and fifth segments dilated beneath, compressed, ciliated with plumose hairs; flagellum not so long as the last two joints of the peduncle. Mandibles having the second and third joints of the appendage long, subequal; third tipped with long cylindrical

hairs, serrated upon one side and curved at the apex. First pair of maxillæ having the ischium long and the squamiform plate tapering. Second pair of maxillæ having the basos complex; it is formed like a hollow chamber with a longitudinal septum, the edges ciliated; ischium tapering, and plumosely ciliated upon the inner margin. Maxillipeds having the carpus internally dilated, compressed, abundantly covered with fasciculi of long hairs strongly serrated upon the lower margin; propodos internally dilated, compressed, fringed with crenulated hairs; dactylos absent. First pair of gnathopoda having the meros short, the carpus long, and the propodos about half as long as the carpus; dactylos unguiculate; hairs upon the propodos long, lobed at the point, and furnished with a subapical appendage. Second pair of gnathopoda scarcely differing from the first pair except that the dactylos is rudimentary; the hairs upon the inferior margin of the carpus are of two kinds, one long and slender, the other short, stout, flat, curved at the point, and crenulate upon each margin; upon the propodos they are short, lobed, and serrated along one side. Two anterior pairs of pereiopoda resembling each other; meros plumosely ciliated; carpus compressed, dilated, ciliated upon the inferior side, and furnished with a few stout spines; propodos compressed, dilated, and furnished along the apical margin with short stout spines. Third pair of pereiopoda having the meros and carpus distally produced posteriorly, scaly, the margin of each scale fringed with short spines or long plumose cilia; propodos not dilated; anterior margin and apex studded with short strong spines; dactylos absent. Fourth pair of pereiopoda having the meros posteriorly and the carpus anteriorly dilated and covered with fasciculi of short spines and long simple hairs, the latter marginal; propodos cylindrical, and studded posteriorly and on the apex with bunches of short strong spines. The posterior pair of pereiopoda differ from the preceding in having the meros dilated posteriorly and distally, and the propodos compressed and slightly dilated. Three posterior pairs of pleopoda short; rami subequal, spinous; a fasciculus of long plumose hairs near the inferior distal margin of the peduncle of the penultimate pair. Telson deeply divided, the divisions dilated so as to overlap each other; apex covered with spines; a small, lateral, compressed, spinous lobe upon each side at the base.

Length $\frac{1}{2}\frac{1}{0}$ths of an inch (exclusive of the inflected portion of the pleon).

Hab. Falmouth (*Dr. Leach*); Moray Frith (*Rev. G. Gordon*); Sunderland (*Mr. A. Hancock*); Oxwich and Rhosilly Bays, Glamor-

ganshire (*Mr. M. Moggridge* and *C. S. B.*). It burrows in the sands between tide-marks, and leaves tracks upon the surface which are of interest to the geologist. These have been described by Mr. Albany Hancock in a paper "On certain vermiform fossils found in the Mountain Limestone districts of the North of England," read at the meeting of the British Association at Leeds in 1858, and published in the 'Annals of Natural History' and in the 'Transactions of the Tyneside Naturalists'-Field Club.'

29. UROTHOË.

Urothoë, *Dana, U. S. Explor. Exped.* p. 920.

Eyes two, lateral. Coxæ very large; fifth pair very small. Gnathopoda slender, subchelate. Superior antennæ appendiculate. Maxillipeds having the propodos long, and dilated anteriorly; carpus dilated internally and anteriorly; the lamellæ of the ischium small, of the basos rudimentary. Posterior pair of pleopoda two-branched, very long; branches foliaceous. Telson double.

1. Urothoë Bairdii, n. s. (Plate XIX. fig. 1.) B.M.

Cephalon not produced into a rostrum. Eyes round, small. Superior antennæ having the peduncle not longer than the peduncle of the inferior; flagellum nearly as long as the peduncle; secondary appendage half as long as the primary. Inferior antennæ one-third as long as the animal; flagellum nearly three times as long as the peduncle, the proximal joints not longer than broad, the distal joints gradually increasing in length to the apex; peduncle furnished along the superior margin with strong spines and long hairs. Gnathopoda uniform; first pair a little the larger; carpus not longer than the propodos, a little dilated posteriorly; propodos gradually increasing in width anteriorly; palm convex, not defined; inferior angle rounded, ciliated. Two anterior pairs of pereiopoda subequal, uniform; propodos slightly dilated anteriorly, furnished with two or three spines; dactylos straight, serrated posteriorly. Third pair of pereiopoda having the basos quadrate; meros and carpus short, broad, round, furnished posteriorly with fasciculi of long plumose hairs; carpus furnished with two or three rows of short stiff spines; propodos nearly three times as long as broad, having three long plumose hairs, two on the anterior and one on the posterior margin, and two long straight spines at the distal extremity of the propodos; dactylos long, cultriform. Fourth and fifth pairs of pereiopoda uniform; coxæ small; basos oblong quadrate; meros and carpus not so broad as in the third pair of pereiopoda; propodos cylindrical, ciliated anteriorly; dactylos straight.

styliform. Antepenultimate pair of pleopoda short; rami very unequal: penultimate short; rami equal: ultimate long; rami broad, tapering, much longer than peduncle, one branch furnished with plumose cilia; the outer clean, having an articulation near the apex. Telson having each division tipped with a solitary central spine with a fine hair upon each side.

Length $\frac{1}{20}$ths of an inch.

Hab. Macduff (*Mr. Gregor*).

The name is given in compliment to the author of the Monograph of the British Entomostraca.

2. Urothoë marinus. (Plate XIX. fig. 2.)

Sulcator marinus, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857. *White, Hist. Brit. Crust.* p. 175.

Cephalon not produced into a rostrum. Superior antennæ having the peduncle as long as the inferior antennæ; superior margin having fasciculi of cilia: flagellum scarcely longer than last joint of peduncle; secondary appendage half as long as the primary. Inferior antennæ having the first joint of the peduncle as long as the other two, furnished with three longitudinal rows of obtuse-pointed spines gradually increasing in length towards the distal extremity of the joint, each subapically tipped with a small hair; fourth and fifth joints subequal, furnished superiorly and distally with a few spines and long hairs; flagellum consisting of a single joint, tipped with two long hairs. First pair of gnathopoda much smaller than the second; carpus longer than the propodos, dilated inferiorly, straight, sparsely ciliated, minutely produced anteriorly; propodos narrow ovate, slightly increasing anteriorly, ciliated; palm not defined; dactylos long, curved. Second pair of gnathopoda larger than the first, which it resembles, except that the inferior dilated margin of the carpus is convex and fringed with two longitudinal rows of cilia, one directed anteriorly, the other posteriorly; distal margin excavated; propodos increasing anteriorly in breadth; palm emarginate, scarcely defined; inferior angle rounded, ciliated. Two anterior pairs of pereiopoda uniform; basos furnished at the posterior distal extremity with a fasciculus of plumose cilia; carpus furnished posteriorly with four obtuse-pointed spines, gradually increasing in length; propodos dilated posteriorly, and furnished with four or five sharp straight spines of unequal length; dactylos nearly straight, with coarse serratures (or small tubercles) upon the posterior margin. The dactylos, with the large spines upon the propodos and the spines

upon the carpus, evidently forms a strong prehensile organ. Third pair of pereiopoda having the basos quadrate, posteriorly crenulate, a cilium springing from each depression; meros posteriorly and distally produced, fringed with long plumose cilia; carpus broad, round, furnished with two or three rows of short stout spines and a few long plumose cilia; dactylos cultriform, anterior margin slightly serrated near the point. Posterior pair of pereiopoda having the basos rounded posteriorly; carpus furnished anteriorly with short spines; propodos produced at the distal extremity, and tipped with a long, straight, obtuse-pointed spine; two similar spines upon the corresponding anterior margin; a bunch of spines also occur near the centre of the anterior margin; dactylos crooked, having three small tubercles upon the anterior margin. Antepenultimate pair of pleopoda having the rami short, unequal, naked, styliform: penultimate pair having the rami equal, short, styliform, naked: ultimate pair long; rami subequal, lanceolate, fringed with long plumose cilia; outer branch having an articulation near the apex. Telson subapically furnished with a short stout spine and several fine hairs.

Length $\frac{4}{20}$ths of an inch.

Hab. Banff (*Mr. Edward* and *Mr. Gregor*). By the latter it was taken from the stomach of a Haddock caught in about 30 fathoms. To these two gentlemen, together with my much-valued correspondent, the Rev. G. Gordon, I am largely indebted for Crustacea from the neighbourhood of the Moray Frith, which form so considerable an item among the North British forms. Shetland (*Mr. G. Barlee*).

3. **Urothoë brevicornis,** n. s. (Plate XX. fig. 1.) - B.M.

Eyes small, round. Superior antennæ having the peduncle as long as the inferior antennæ; flagellum five-jointed; secondary appendage two-jointed. Inferior antennæ like those of *U. marinus*. First pair of gnathopoda small, slender; carpus not produced inferiorly; propodos shorter than the carpus, tapering; palm not defined, ciliated; dactylos slightly curved. Second pair of gnathopoda having the carpus dilated; inferior margin fringed with cilia, and excavated anteriorly; propodos oblong-ovate; palm scarcely defined, ciliated; dactylos slightly curved. First and second pairs of pereiopoda uniform; one or two long spines on carpus, and one or two on propodos; propodos not dilate; dactylos straight. Third pair of pereiopoda having the basos triangulate; meros, carpus, and propodos furnished with rows of short stout spines; distal extremity of the carpus fringed with long plumose cilia; dactylos long, straight, cultriform, imperfectly serrated upon the anterior

margin. Fourth and fifth pairs nearly uniform; basos having the posterior margin rounded, imperfectly crenulated; dactylos straight, styliform. Ante- and penultimate pairs of pleopoda having both the base and the rami longer than in *U. marinus*: ultimate pair not reaching much beyond the antepenultimate; rami lanceolate, naked. Telson long, obtuse, naked.

Length scarcely $\frac{2}{20}$ths of an inch.

Hab. Tenby (*Mr. W. Webster*).

4. Urothoë elegans. (Plate XX. fig. 2.) B.M.

Urothoë elegans, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
Gammarus elegans, *Spence Bate, Brit. Assoc. Report*, 1855.

Cephalon not produced beyond the base of the superior antennæ. Eyes nearly horizontal, long ovate. Superior antennæ having the first joint of the peduncle broader than, and subequal in length to, the others; flagellum about half as long as the peduncle, four-jointed; secondary appendage two-jointed. Inferior antennæ having the peduncle nearly as long as the peduncle of the superior; flagellum slight, nearly as long as the animal. Gnathopoda subequal, slender; carpi longer than the propoda; palmæ oblique, imperfectly defined, ciliated. First and second pairs of perciopoda subequal; propoda slightly dilated at the distal extremity, ciliated; dactyla straight, sharp, styliform. Third pair of perciopoda having the basos quadrate; dactylos long, straight, sharp, styliform. Fourth pair longer than the third; basos oval; dactylos long, straight, sharp, styliform. Fifth pair having the basos oval; dactylos long, sharp, straight; a few long plumose cilia mixed with short simple ones occur upon the posterior margins of the carpus and propodos. Ante- and penultimate pairs of pleopoda short; rami very short, shorter than their respective bases, subequal: ultimate pair long; rami longer than base, plumosely ciliated.

Length $\frac{4}{20}$ths of an inch.

Hab. Plymouth; found among trawl refuse (*C. S. B.*).

This species appears to be so much like *U. irrostratus*, that, had not their respective habitats been so distant, I should have been inclined to have united them. I have observed a close approximation, in the forms of the Amphipods found on the coasts of Western Europe, to those on the coasts of the Australasian Islands.

5. Urothoë irrostratus. (Plate XX. fig. 3.)

Urothoë irrostratus, *Dana, U. S. Explor. Exped.* p. 922. pl. 62. f. 5.

"Near *U. rostratus*. Cephalon not rostrate. Flagellum of the

superior antennæ six- or seven-jointed, shorter than the peduncle; appendage very short, two- or three-jointed. Carpus of second and third pairs of perciopoda nodulose along the inner side, this side somewhat arcuate.

"Length 3 lines.

"*Hab.* Sooloo Sea, with *U. rostratus*."—*Dana*.

6. Urothoë rostratus. (Plate XX. fig. 4.)

Urothoë rostratus, *Dana, U.S. Explor. Exped.* p. 921. pl. 62. fig. 5.

"Cephalon lamellately produced, even to the apex of the first joint of the peduncle of the superior antennæ. Eyes round. First joint of superior antennæ rather stout, oblong; second joint more slender and a little shorter. Inferior pair longer than half the body; penultimate joint of peduncle towards apex furnished with stout reversed setæ; flagellum very slender; joints long. Gnathopoda subequal; propoda a little oblong, obliquely truncate at apex. First and second pairs of perciopoda hardly prehensile; propodos and carpus furnished with stout setæ somewhat like fingers. Fifth pair of perciopoda quite short, much shorter than the fourth.

"Length 3 lines.

"*Hab.* Sooloo Sea, Feb. 1842."—*Dana*.

30. LILJEBORGIA, n. g.

Cephalon not much produced. Pereion long, slender, and compressed. Inferior antennæ longer than the superior. Coxæ not deeper than their respective segments. Gnathopoda resembling each other in form; second pair larger than the first, subchelate; carpus continuous with the propodos, and produced anteriorly along its inferior margin. Perciopoda having the dactyla styliform. Posterior pair of pleopoda biramous. Telson single, entire.

This genus is distinguished from *Urothoë* by the large gnathopoda, small coxæ, and the form of the telson. It is named in compliment to Prof. Liljeborg.

1. Liljeborgia pallida. (Plate XX. fig. 5.) B.M.

Gammarus pallidus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Pleon having a minute dorsal tooth upon the first, second, and fourth segments; the posterior margin of the third segment excavate near the infero-posterior angle, which is produced into a sharp tooth. Eyes large, circular, black. Superior antennæ shorter than the peduncle of the inferior; flagellum as long as the peduncle;

secondary appendage nearly as long as the primary. Inferior antennæ having the fourth and fifth joints subequal and three times as long as the third; flagellum not so long as the fifth joint of the peduncle. Gnathopoda similar in form; the second pair larger than the first, having the carpus very short, inferiorly produced; propodos ovate, tapering; palm occupying nearly the whole of the inferior margin, ciliated with hairs of irregular form, alternately long and short, each carrying two minute cilia upon the anterior margin, and short hooks directed posteriorly; dactylos long, curved, denticulated upon the inner margin. Two anterior pairs of pereiopoda slender and short; the three posterior pairs gradually increasing in length; the basos in each is ovate, and successively broader, the last two being posteriorly serrated; the dactyla upon all the pereiopoda are long, slender, and styliform. Posterior pair of pleopoda styliform, almost naked. Telson membranous, ovate.

Length $\frac{4}{20}$ths of an inch.

Hab. Dredged in Plymouth Sound (*Mr. T. P. Smyth* and *C. S. B.*).

The colour of this animal is white, with a rich crimson blotch near the middle which is very conspicuous, and readily enabled me to identify every specimen that I took. The propoda on the gnathopoda are of a rosy hue, and a tinge of the same colour may be observed at several of the articulations of the pereiopoda.

31. PHÆDRA.

Phædra, *Spence Bate, Quart. Journ. Geol. Soc.* p. 137, 1858.

Cephalon not much produced over the peduncles of the antennæ. Segments of the pereion very short, of the pleon very long. Eyes (not made out). Superior antennæ shorter than the inferior, appendiculated. Gnathopoda (not made out). Coxæ small. Three posterior pairs of pereiopoda subequal. Posterior pair of pleopoda biramous. Telson squamiform, simple.

This genus is one of considerable interest in consequence of its approximation to the only fossil Amphipod that has yet been discovered.

1. **Phædra Kinahani**, n. s. (Plate XXI. fig. 1.) B.M.

Cephalon produced anteriorly, slightly depressed. Six segments of the pereion very short; seventh as long as those of the pleon. Three posterior segments of the pereion and five of the pleon centrally and dorsally produced posteriorly, the last three into prominent teeth. Eyes small, round, black. Superior antennæ having

the first joint of the peduncle thicker and longer than the other two, the inferior distal extremity furnished with a small sharp tooth; flagellum reaching nearly to the extremity of the inferior antennæ, secondary appendage half as long as the primary, joints in each longer than broad. Inferior antennæ having the peduncle nearly as long as that of the superior antennæ; flagellum not so long as the last joint of the peduncle, joints fused together more completely upon the lower margin, ciliated only upon the upper margin. Gnathopoda uniform; propodos triangular; palm oblique, nearly as long as the inferior margin, slightly convex, fringed with alternate long and short bent hairs, the long ones each having two lateral cilia; inferior angle defined by a tubercle surmounted by a sharp spine; carpus produced to half the length of the inferior margin; meros having the inferior distal extremity produced to a sharp angle. Three posterior pairs of pereiopoda equal in length; the basos scarcely dilated. Ante- and penultimate pairs of pleopoda slightly spinous; ultimate pair clean, somewhat longer than the preceding. Telson emarginate, having each extremity notched at the apex.

Length $\frac{2}{20}$ths of an inch.

Hab. Taken from a Nullipore bank off the coast in the neighbourhood of Glasgow. For this and several other species I am indebted to my valued correspondent Mr. Robertson of Glasgow.

2. **Phædra antiqua.** (Plate XXI. fig. 2.) B.M.

Phædra antiqua, *Spence Bate, Quart. Journ. Geol. Soc.* p. 137. pl. 6. f. 8, 1858.

Cephalon produced into a minute rostrum. Third segment of the pleon having the posterior margin ornate, serrated and denticulated. Superior pair of antennæ having the first joint of the peduncle broader and longer than the second; third joint scarcely longer than the first of the flagellum; flagellum short (?), secondary appendage uniarticulate. Second pair of antennæ having the peduncle as long as the superior antennæ (?). Coxæ of the gnathopoda smaller than those of the two anterior pairs of pereiopoda. Three posterior pairs of pereiopoda subequal. Posterior pair of pleopoda half as long again as the two preceding. Telson long, lanceolate.

Length $\frac{4}{20}$ths of an inch.

Hab. Moray Frith (*Rev. G. Gordon*).

Lysianassa spinifera (Stimpson, Mar. Invert. Grand Manan, p. 49), of which the following is the description, seems to be closely related

to this genus, only differing from it, apparently, in the telson consisting of two long spines:—

"Body smooth and shining, slightly compressed, but rounded above, broadest anteriorly. Cephalon rounded, with a prominent down-curving rostrum. Pleon, constituting nearly one-half of the body, much compressed. Coxæ not very large. Eyes red, and rather large. Superior antennæ two-thirds as long as the inferior, thick at their bases, but tapering suddenly after their junction with the long accessory flagellum, which is nearly one-half the length of the principal one. Inferior antennæ with very thick basal joints, and equalling in length two-thirds that of the body, their flagella constituting more than one-half their length. Pereiopoda hairy, all terminating in short hooked dactyla. Gnathopoda slender, longer than the pereiopoda, with the carpus* in each a little expanded, but scarcely sufficient to form a *hand*. Posterior pair of pereiopoda much shorter than usual†, and provided along the edges with short spine-like hairs. First three segments of the pleon serrated above on their posterior edges; last three compressed above into sharp spine-like projections, of which the middle one is the longest. First pair of pleopoda very long and slender, projecting beyond the others. Telson consisting of two long spines. Colour wine-yellow; inferior antennæ annulated with reddish.

"Length 0·32 inch.

"*Hab.* Dredged in 40 fathoms, on a soft muddy bottom, off Long Island, Grand Manan."—*Stimpson.*

32. PROSOPONISCUS.—(*Fossil.*)

Trilobites, *Schlotheim, Petrefact.* 1820, p. 41.
Palæocrangon, *Schauroth, Zeitschr. Deut. Geol. Gesell.* 1854, vi. p. 560.

Cephalon curved down anteriorly. Pereion having the segments short, subequal. Pleon having the segments long and deep; the first deeper than the second. Coxæ small. The other parts imperfect.

1. Prosoponiscus problematicus. (Plate XXI. fig. 3.)

Prosoponiscus problematicus, *Kirkby, Quart. Journ. Geol. Soc.* xiii. p. 213.
Spence Bate, Quart. Journ. Geol. Soc. p. 137. pl. 6. f. 1–7, 1858.
Trilobites problematicus, *Schlotheim, Petrefact.* 1820, p. 41.
Palæocrangon problematica, *Schauroth, Zeitschr. Deut. Geol. Gesell.* 1854, vi. p. 560. pl. 22. f. 2 *a–e.*

Cephalon, pereion, and pleon slightly carinated. Posterior margin

* "Antepenultimate article," *auct. l. c.*
† This character approximates it to *Phoxus.*

of the second segment of the pleon waved. Eyes round, prominent. Specimen imperfect.

Hab. Magnesian limestone, Durham (*Kirkby*); Zechstein-dolomite, Glücksbrunn (*Schlotheim*).

33. ISÆA.

Isæa, *Edwards, Ann. des Sc. Nat.* xx. p. 380; *Hist. des Crust.* iii. p. 26.

Eyes two. Superior antennæ appendiculate. Gnathopoda subchelate. Pereiopoda subchelate. Coxæ of the third pair of pereiopoda bilobed; the anterior lobe as deep as the preceding coxæ. Posterior pair of pleopoda biramous. Telson single.

Dana has formed a subfamily Isæanæ, based upon the prehensile character of the pereiopoda, to receive *Isæa* and *Anisopus*. I have thought it desirable not to follow this arrangement, because the prehensile character is not dependent upon any fundamental alteration of the organs. In *Isæa* the pereiopoda have the propodos on the flexible side developed into a palm; but the whole of the organs remain otherwise unaltered. Many species of Amphipoda have the pereiopoda more or less prehensile. Some have a powerful dactylos that impinges against the propodos, as *Darwinia*; others have the propodos armed with short strong spines that antagonize with the dactylos, as in *Lysianassa Costæ*; but these, though prehensile, bear no resemblance to the chelæ proper of Crustacea. In the present genus (*Isæa*) I think it is a peculiar habitat that has induced an extreme of normal development.

1. Isæa Montagui. (Plate XXII. fig. 1.) B.M.

Isæa Montagui, *Edwards, Ann. des Sc. Nat.* xx. p. 380; *Hist. des Crust.* iii. p. 26. pl. 29. f. 11.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 179.

Eyes reniform. Superior antennæ half as long as the body; the flagellum as long as the peduncle. Inferior antennæ nearly as long as the superior; flagellum not longer than the last joint of the peduncle. Coxæ of the gnathopoda and the two anterior pereiopoda gradually increasing in depth; of the three posterior pereiopoda as gradually decreasing. Gnathopoda similar in form; the second much larger than the first, having the propodos ovate; palm oblique, waved, defined by two small hairs or spines. The two anterior pairs of pereiopoda having the propodos dilated posteriorly: the distal extremity, against which the dactylos impinges, slightly oblique, serrated. Three posterior pairs similarly formed, but the propodos dilated anteriorly. Three posterior pairs

of pleopoda having their rami subequal. Telson annulate. Colour reddish-yellow, shading into a brownish-red.

Length $\frac{1}{20}$ths of an inch.

Hab. Isle of Chausay (*Edw.*); trawlers off Plymouth (*C. S. B.*). All the specimens that I have taken were from the carapace and branchial chambers of *Maia Squinado*.

34. IPHIMEDIA.

Iphimedia, *Rathke, Beitr. zur Faun. Norwegens, Nov. Act. Leop.* 1843; (not Iphimedia, *Dana*).
Microcheles, *Kröyer, Tidskr. Nat.* ser. 2. vol. ii. p. 5.

Cephalon produced and anteriorly depressed. Pereion distended. Pleon compressed. Eyes two. Antennæ simple, subequal. Oral appendages projected anteriorly. Mandibles having an appendage. Maxillipeds not unguiculate. First pair of gnathopoda feeble, having the dactylos rudimentary, subapical; second also feeble, subchelate. Coxæ gradually increasing in depth to the second pair of pereiopoda, which, together with the preceding, are produced inferiorly to an angle. Coxæ of the third pair of pereiopoda not half as deep as the second. Pereiopoda having the dactylos strong and curved. Posterior pair of pleopoda biramous, clean. Telson single, squamiform, emarginate.

My description of this genus differs from Rathke's; but in this I think I am justified, inasmuch as, while he says the second pair of gnathopoda are simple, his figures represent them subchelate; and the first, which he says are chelate, have the dactylos so rudimentary that it requires considerable magnifying power to detect it, and though perhaps chelate, yet, from its immature character, only useful as a diagnosis.

Dana has evidently mistaken this genus for that of *Atylus* of Leach, to which undoubtedly all his species belong, except perhaps *I. nodosa*, in which the gnathopoda and maxilliped have not been examined.

1. **Iphimedia obesa.** (Plate XXII. fig. 2.) B.M.

Iphimedia obesa, *Rathke, Beitr. zur Faun. Norwegens, Nov. Act. Leopold.* p. 89. pl. 3. f. 1, 1843.
Microcheles armata, *Kröyer, Nat. Tidskr.* ser. 2. vol. ii. p. 5.

Cephalon produced into a sharp pointed rostrum. Last segment of the pereion and the first three segments of the pleon having the posterior margin of each produced into two latero-dorsal teeth; third segment of the pleon having the posterior margin also furnished with two infero-posterior teeth. Eyes subreniform, scarlet. Superior antennæ one-fourth the length of the animal; peduncle

as long as the flagellum. Inferior antennæ rather longer than the superior; peduncle as long as the flagellum. Gnathopoda slender, feeble. First pair having the propodos long, inferior distal extremity produced; dactylos rudimentary, subapical, the extremity reaching scarcely beyond the apex of the propodos. Second pair having the carpus as long as the propodos; propodos produced and dilated inferiorly; dactylos small, subapical. Coxæ of the second pair of pereiopoda excavated to receive the anterior lobe of the third pair. Coxæ of the three posterior pairs of pereiopoda not produced posteriorly to an angle. Basos of ultimate pair produced, and serrated posteriorly and inferiorly; of the penultimate and antepenultimate pairs not produced. Meros in each pair of pereiopoda distally produced to a sharp angle—first two pairs anteriorly, last three pairs posteriorly. Three posterior pairs of pleopoda subequal, styliform, biramous. Telson emarginate, angular. Colour yellow, spotted with a pigment that increases in quantity and depth of colour with age, until the animal becomes nearly black.

Length $\frac{8}{20}$ths of an inch.

Hab. Tenby (*Mr. Webster*); Macduff (*Mr. Gregor*); Loch Fyne. Shetland (*Mr. Barlee*); Belfast Bay, 20 fathoms (*Mr. Thompson*); Plymouth (*C. S. B.*).

2. Iphimedia Eblanæ. (Plate XXII. fig. 3.)

Iphimedia Eblanæ, *Spence Bate, Nat. Hist. Review*, iv. p. 229. pl. 16. f. 1, 1857; *Proc. Nat. Hist. Soc. Dublin*, p. 28. pl. 16. f. 1, 1856–57.

Cephalon short, produced into a rostrum, depressed anteriorly and incurved. First segment of the pereion long; second, third, fourth, and fifth very short; sixth longer; seventh very long. First three segments of the pleon dorsally armed with a strong vertical tooth directed posteriorly. Last segment of the pereion and first three of the pleon having the posterior margin produced into a latero-dorsal tooth on each side. Two anterior segments of the pleon having a lateral emargination, produced posteriorly into a tooth beneath, as well as a corresponding one upon the posterior margin of the third segment; the infero-posterior angle of the second and third segments produced into a tooth. Eyes reniform. Antennæ subequal, about one-sixth the length of the animal. First pair of gnathopoda feeble, slender; carpus longer than propodos; dactylos obsolete. Second pair of gnathopoda a little stouter than the first; carpus and propodos subequal; propodos produced and dilated distally and inferiorly, hairy; dactylos short, subapical. Pereiopoda strong, robust.

Coxæ of the second pair excavated to receive the coxæ of the third pair. Coxæ of the third, fourth, and fifth pairs produced posteriorly to a point; basa of the same pairs produced posteriorly into two points; mera of the same produced posteriorly and distally. Three posterior pairs of pleopoda subequal. Telson emarginate, angular.

Length $\frac{7}{10}$ths of an inch.

Hab. Dublin Bay. Several specimens were taken by my friend Prof. Kinahan from the branchial cavities of *Rhizostoma Cuvieri*; the one that I had the opportunity of examining is preserved in the Dublin Museum. Western coast of England (*Guérin-Méneville*).

3. Iphimedia nodosa. (Plate XXIII. fig. 1.)

Iphimedia nodosa, *Dana, U. S. Explor. Exped.* p. 928. pl. 63. f. 3.

"Eyes round. Body rather stout; integument subcalcareous; front with a short slender beak. Pleon subcarinate. Four anterior segments of pereion entire at posterior margin, fifth sinuous behind, sixth and seventh sparingly dentate. First three segments of pleon dentate on the back and sparingly acuto-nodose on the sides; the rest naked. Three anterior coxæ entire, obtuse; fourth bidentate behind; three following narrow and posteriorly acute. Basos of last three pairs of pereiopoda subquadrate, unidentate behind; posterior angle acute. Inferior antennæ the longer, shorter than half the body. Gnathopoda and pereiopoda naked; gnathopoda quite small; propoda minute. First two pairs of pereiopoda larger than the gnathopoda; three posterior pairs a little longer, subequal; meros triangular, its posterior apex prolonged and acute.

"Length 4 lines.

"*Hab.* Hermit Island, Tierra del Fuego. Collected by Lieutenant Case."—*Dana.*

The near resemblance of this species to *I. Eblanæ* induces me to retain it in this genus for the present, until future examination shall determine the character of the maxilliped and the form of the gnathopoda.

35. OTUS, n. g.

Cephalon produced anteriorly. Pereion distended. Pleon compressed. Antennæ simple, subequal. Mandibles having an appendage. Maxillipeds unguiculate. Ischium having a broad plate nearly as long as the four succeeding joints; basos furnished with a long narrow process. First pair of gnathopoda chelate; second subchelate. Pereiopoda short, robust, strong. Posterior pair of pleopoda biramous. Telson single, squamous.

This genus differs from *Iphimedia* in the form of the maxillipeds, in the distinctly chelate character of the first pair of gnathopoda, and in the larger relative proportions of the second.

From the close approximation of this genus to the preceding, I have chosen for its name that of the son of Iphimedia.

1. **Otus carinatus**, n. s. (Plate XXIII. fig. 2.) B.M.

Cephalon produced into a rostrum. Pereion dorsally carinated. Third segment of the pleon having an elevation near the dorsal centre, and the posterior margin produced into a sharp tooth near the lateral centre; infero-posterior angle not much produced. Superior antennæ short; peduncle scarcely reaching beyond the extremity of the rostrum; flagellum not longer than the peduncle, five-jointed, first joint as long as the other four. Inferior antennæ shorter than the superior; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda chelate, having the carpus as long as the propodos; propodos cylindrical, distal extremity produced, pointed, and with a tooth exteriorly; dactylos tipped with a long straight unguiculus, furnished at the base with fringed spines. Second pair of gnathopoda subchelate, stouter than the first, having the meros and carpus produced inferiorly; propodos dilated, palm straight, slightly oblique, pectinate; dactylos slightly curved. Pereiopoda short, stout, and strong; the propodos slightly arcuate in each; the meros dilated and distally produced; the basos in each of the three posterior pairs is produced into two teeth-like processes. Coxa of the second pair of pereiopoda excavated to receive that of the third pair, which is angularly produced posteriorly. Posterior pair of pleopoda shorter than the two preceding pairs; rami unequal, styliform, clean. Telson ovate.

Length $\frac{1}{20}$ths of an inch.

Hab. Shetlands (*Mr. Barlee*).

36. ACANTHONOTUS.

Acanthonotus, *Owen, Append. to Second Voyage N. W. Passage*, p. xc. *White, Hist. of Brit. Crust.* p. 177; *Cat. Brit. Crust. B. M.* p. 5, 1850.
Edwards, Hist. des Crust. iii. p. 24.
Vertumnus, *White, Cat. of Crust. B. M.* 1847.

Cephalon produced anteriorly. Pereion having the segments short. Pleon having the segments long. Antennæ simple. Oral appendages projecting. Mandibles with an appendage. Coxæ, except the last two, deep, narrow, pointed. Gnathopoda slender, feeble, subcheliform. Pereiopoda subequal; dactyla unguiculate. Posterior pair of pleopoda biramous. Telson single, divided.

1. Acanthonotus Testudo. (Plate XXIII. fig. 3.) B.M.

Oniscus Testudo, *Montagu, Linn. Trans.* ix. p. 102. f. 5. t. 5.
Leach, Edinb. Encyc. vii. p. 405. gen. lxvi.
Acanthonotus Testudo, *White, Hist. Brit. Crust.* p. 177; *Proc. Zool. Soc. Lond.* 1850; *Cat. Brit. Crust. B. M.* p. 51, 1850.
Gosse, Marine Zoology, p. 142. f. 260.
Acanthonotus Cranchii, *White, Cat. Crust. B. M.* p. 51, 1847.
Vertumnus Cranchii, *White, Cat. Crust. B. M.* p. 89, 1847.
Acanthonotus Owenii, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Dorsally carinated. Cephalon produced into a long rostrum. Last segment of the pereion and first four of the pleon produced posteriorly into a large dorsal tooth. Three anterior segments of the pleon carrying a lateral ridge, having the posterior margin ornately denticulated; fourth having a deep dorsal sinus. Eyes round, prominent. Superior antennæ pyriform; peduncle longer than the flagellum. Inferior antennæ shorter than the superior, and not so stout at the base. Gnathopoda uniform; coxa deep, produced to a point; carpus longer than the propodos, slightly dilated at the inferior distal extremity, and ciliated; propodos having the palm short, acute, rounded at the inferior angle, and ciliated. First pair of pereiopoda having the coxa deep, and produced to a point. Second pair rather deeper than the first and produced to a point, curved posteriorly; upper part excavated to receive the coxa of the next pair of pereiopoda, which is produced to a point, obliquely directed posteriorly. Coxæ of the two posterior pairs of pereiopoda small, angular; basos of each of these posterior pairs gradually increasing in dilatation. Three posterior pairs of pleopoda subequal; rami equal. Telson long and deeply cleft.
Length $\frac{1}{2}$ an inch.

Hab. Scotland, Banff (*Mr. Edward*), Macduff (*Mr. Gregor*); Ireland, Bray, Scallop-bank, 15 to 30 fathoms (*Prof. Kinahan*); England, Falmouth (*Dr. Leach* and *Mr. Webster*), S. Devon (*Montagu*).

It is worthy of remark that the larva of this species possesses a uniarticulate secondary appendage to the superior antennæ.

2. Acanthonotus serratus. (Plate XXIII. fig. 4.)

Oniscus serratus, *O. Fabricius, Fauna Grönl.* no. 237.
Amphitoë Serra, *Kröyer, Grönl. Amfip.* t. 2. f. 8.
Acanthonotus Serra, *Edw. Hist. des Crust.* iii. p. 25.
Acanthonotus cristatus, *Owen, Appendix to Second Voyage N. W. Pass.* p. xc. pl. B. f. 8.
Edw. Hist. des Crust. iii. p. 24.
Acanthonotus serratus, *Stimpson, Marine Inv. Grand Manan*, p. 52.

Dorsally carinated. Cephalon produced into a rostrum. Sixth and seventh segments of the pereion and the first four of the pleon

dorsally produced and elevated into a tooth. Third segment of the pleon having the posterior margin laterally produced into a tooth near the centre, and also at the infero-posterior angle. Superior antennæ having the flagellum longer than the peduncle; inferior antennæ shorter than the superior. Gnathopoda uniform; carpi longer than the propoda; propoda having the palm short; dactyla longer than the palmæ; coxæ deep, not produced to an angle. Second pair of pereiopoda having the coxa produced to a point, but not directed posteriorly; posterior margin having a tooth near the centre. Third pair of pereiopoda produced to an angle directed downwards. Three posterior pairs of pereiopoda having the basos angularly developed posteriorly. Three posterior pairs of pleopoda subequal; rami equal. Telson deeply divided. Length $\frac{3}{4}$ of an inch.

Hab. Igoolik, Polar Sea (*Sir John Clark Ross*); Greenland (*Fabricius*, *Kröyer*); Nantucket Island, N. America, 35 fathoms, gravelly bottom (*Stimpson*).

Mr. Stimpson describes this species as "very beautiful in coloration, which consists of deep pink annulations, one to each segment of the body, on a yellowish-white ground. The anterior half of the ring is thus pink, and the posterior half white. The last pair of coxæ are conspicuously coloured. The anterior halves of the antennæ are red."

For the correctness of the above description I am dependent upon the figure given in the Appendix of the Second Arctic Voyage of Sir J. C. Ross, which can be accepted with confidence, it having been drawn from nature by Prof. Owen. On comparing it with the more crude figure of *Amphitoë Serra* in Kröyer's 'Grönlands Amfipoder,' I can discover no specific distinction; but this opinion must necessarily be received with caution, since it is formed upon drawings only.

Not having been able to meet with Otho Fabricius's work above quoted, I am indebted to Mr. Stimpson for the assertion that *Oniscus serratus* of that author is synonymous with *Amphitoë Serra* of Kröyer. M. Milne-Edwards is of opinion that *Amphitoë Serra*, Kr., is probably identical with *Oniscus Cicada* of O. Fabricius (*l. c.* p. 258).

3. Acanthonotus Sayi.

Amphitoë serrata, *Say, Proc. Acad. Philad.* i. pt. 2.
Edw. Hist. des Crust. iii. p. 42.

As well as I can judge from the inadequate description of this species given by Prof. Say, it belongs to this genus. From the two preceding species it only appears to be distinguished by having "three equidistant spinose teeth" upon the palm of each pair of gnathopoda. The name *serratus* being preoccupied, I have taken upon myself the responsibility of changing it. It is named after Prof. Say, in order that the species may continue to be associated with its original describer.

Subfamily 5. GAMMARIDES.

The animals forming this subfamily are generally laterally compressed. The eyes are two, compound, situated upon a protuberance between the superior and inferior pairs of antennæ. The antennæ are situated one above the other. The superior antennæ are long, slender, and filamentous. The inferior antennæ are subequal with the superior. The first pair of gnathopoda are more or less subchelate; the second also, and generally well developed. The posterior pair of pleopoda are never furnished with hooks. The telson is squamiform or tubular.

37. BRANDTIA, n. g.

Cephalon not produced into a rostrum, but elevated into a crest. Antennæ subequal; the superior without a secondary appendage. Gnathopoda subequal, subchelate. Four anterior coxæ as deep as their respective segments of the pereion, not narrow or pointed. Three posterior pairs of pereiopoda short, subequal, having the basa dilated at the upper posterior extremity, and narrowing with a concave sweep to the lower. Posterior pair of pleopoda biramous. Telson squamiform, divided.

1. **Brandtia latissima.** (Plate XXIII. fig. 5, male; fig. 6, female.)

Gammarus latissimus, *Brandt, Voyage de Middendorff.*

Male.—Cephalon crested with four or five posteriorly curved transversely flat teeth, excavate at the apex, the posterior being confluent at the base with a dorsal carina. Pereion having the first two segments elevated along the dorsal central line into a posteriorly curved tooth; the five following elevated into narrow tubercles, each being situated at the posterior half of its respective segment, and having the lateral margins of all its segments curved outwards and upwards, so as to form a row of tubercles immediately above the coxæ. Pleon having the first segment carrying a dorsal carina-like tubercle similar to the preceding; second and third segments having the tubercles broken up into small teeth curved and directed anteriorly. Eyes round, black. Superior antennæ having the first joint of the peduncle armed upon the upper distal extremity with small posteriorly curved teeth; the second and third joints are narrower and shorter than the first; the flagellum is scarcely longer than the peduncle. Inferior antennæ longer than the superior. First pair of gnathopoda having the propodos longer than the carpus, long-ovate; palm tapering, scarcely as long as the inferior margin; dactylos slender

and slightly curved. Second pair slightly larger than the first. Pereiopoda short, subequal, fringed with a few short spines along the flexible margin of the propoda. Posterior pair of pleopoda longer than the preceding, styliform, naked. Telson deeply divided, each division terminating in an acute point.

Female.—Cephalon having a crest in the form of a high longitudinally narrow tubercle, emarginate at the apex. Pereion and the first three segments of the pleon having dorsal tubercles, only just apparent on the anterior segments, and, though gradually increasing, but moderately elevated upon the posterior. The rest as in the male. Eyes round. Superior antennæ longer than the inferior; the first joint of the peduncle not armed with teeth. Second pair of gnathopoda having the propodos with a palm rather longer than the inferior margin. Posterior pair of pleopoda but little longer than the preceding.

Length of the male $\frac{6}{20}$ths, of the female $\frac{8}{20}$ths of an inch.

Hab. (Arctic Asia?) *Voyage de Middendorff.*

The figures and descriptions are taken from specimens sent by Professor Brandt to the Museum at Paris, where I had an opportunity of examining and drawing them. M. Guérin-Méneville also has this species in his collection.

38. DEXAMINE.

Dexamine, *Leach, Edinb. Encyc.* vii. p. 433.

Antennæ long, subequal, slender: superior not appendiculated; peduncle consisting of only two joints, the third not being distinguishable from the first of the flagellum. Mandibles without an appendage. Gnathopoda subequal, feeble, subchelate. Coxæ of the third pair of pereiopoda about half as deep as the preceding; dactyla of all the pereiopoda generally directed posteriorly. Posterior pair of pleopoda biramous. Telson simple, divided, squamiform.

1. Dexamine spinosa. (Plate XXIV. fig. 1.) B.M.

Cancer (Gammarus) spinosus, *Montagu, Linn. Trans.* xi. p. 3. t. 2. f. 1.
Dexamine spinosa, *Leach, Edinb. Encyc.* vii. p. 433; *Zool. Misc.* ii. p. 23; *Linn. Trans.* xi. p. 358.
Thompson, Nat. Hist. of Ireland, iv. p. 395.
Desmarest, Consid. sur les Crust. p. 263. pl. 45. f. 6.
White, Cat. Crust. B. M. 1847; *Cat. Brit. Crust. B. M.* 1850; *Hist. Brit. Crust.* p. 178.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
Amphitoë spinosa, *Gosse, Marine Zool.* p. 141. f. 266.
Amphitoë Marionis, *Edwards, Hist. des Crust.* iii. p. 40; *Ann. des Sc. Nat.* xx. p. 375; *in Cuv. Règne Anim.* pl. 60. f. 6.

Cephalon produced anteriorly into a short, narrow, flat rostrum.

Pereion smooth. Pleon having each segment carinated, and, except the fifth, dorsally and posteriorly produced into a tooth. Eyes ovate, not very large. Superior antennæ slender, having the two joints of the peduncle subequal, the first carrying a strong tooth upon the inferior distal extremity; flagellum nearly as long again as the peduncle. Inferior antennæ slender, shorter than the superior; peduncle scarcely longer than the peduncle of the superior. Maxillipeds having the squamiform plate of the ischium reaching nearly to the extremity of the dactylos. Gnathopoda feeble, subequal, small. First pair having the palm finely pectinated with short obtuse teeth, and defined by a long, curved, double-pointed spine; dactylos curved, internally serrated. Second pair of gnathopoda having the palm crenulated, and fringed with a series of fine, short, equidistant spines of equal length, and a second series of longer ones at greater intervals, defined by a long spine; dactylos serrated upon the inner margin. Three posterior pairs of pereiopoda subequal, strong, having the dactylos directed posteriorly. Three posterior pairs of pleopoda subequal; the antepenultimate rather the shortest. Telson very long, narrow, divided for about two-thirds of its length; external margins carrying each four fasciculi of hairs; apex of each section serrated, and armed with a solitary strong spine. Colour more or less mottled with red.

Length nearly half an inch.

Hab. Torcross, Devon (*Montagu*); Plymouth (*C. S. B.*); Penzance (*Mr. Harris* and *Mr. Webster*); Falmouth (*Mr. Webster*); Polperro (*Mr. Loughrin*); Macduff (*Mr. Gregor*); Shetland (*Mr. Barlee*); Bray, Dublin (*Prof. Kinahan*); Belfast (*Mr. Hyndman* and *Mr. Thompson*); Bangor, co. Down, and Strangford Loch (*Mr. Thompson*); Cumbrae, Glasgow (*Mr. Robertson*); Etretat, Normandy (*Mr. J. G. Jeffreys*); Brittany (*M. Edwards*); Piedmont (*Mr. J. G. Jeffreys*); Weymouth (*Gosse*).

2. **Dexamine Blossevilliana**, n. s. (Plate XXIV. fig. 2.)

Cephalon produced into a narrow flat rostrum. Pereion with the segments short. Pleon with the segments long, and each, except the sixth, dorsally carinated and posteriorly produced into a strong tooth; third segment armed with a strong tooth upon each side near the centre of the posterior margin; fourth and fifth segments having a dorsal sinus. Eyes very large, quadrate. Antennæ slender, subequal, about two-thirds the length of the animal: superior pair having the first joint of the peduncle armed with a tooth at the inferior distal extremity; second joint longer

and slighter than the first; flagellum very slender and half as long again as the peduncle: inferior pair having the peduncle rather shorter than the peduncle of the superior; ultimate joint longer than the penultimate. Gnathopoda small, feeble, subequal. First pair having the propodos subovate; palm oblique, imperfectly defined. Second pair having the propodos long-ovate; palm very oblique, ciliated, scarcely defined; dactylos long, having a single denticle upon the interior margin near the apex. Three posterior pairs of pereiopoda having the basos oval and dactylos posteriorly directed. Three posterior pairs of pleopoda unequal, the penultimate being the shortest. Telson very long, cleft nearly to the base; external margins carrying four fasciculi of hairs; apex serrated and carrying a subapical spine.

Length $\frac{8}{20}$ths of an inch.

I found this pretty species in one of the bottles kindly entrusted to me by Prof. Milne-Edwards; it was labelled "Voyage de M. Blosseville, 1832." I have not been able to learn the locality from whence it was procured, and have associated the name with that of the discoverer. It is preserved in the Museum of the Jardin des Plantes.

3. **Dexamine Loughrini**, n. s. (Plate XXIV. fig. 3.) B.M.

Cephalon having a small rostrum. Three anterior segments of the pleon without dorsal teeth. Eyes black, ovoid. Superior pair of antennæ having the first joint robust, and not furnished with an inferior distal tooth; second joint as long again as the first; third joint lost in the flagellum. Inferior antennæ scarcely as long as the superior. Gnathopoda short, membranaceous; the propoda quadrate; palmæ scarcely oblique. In other respects the animal bears a resemblance to the type of the genus.

Length $\frac{3}{20}$ths of an inch.

Hab. Rock-pools outside Polperro Harbour, where the water is very deep close up to the shore (*C. S. B.*).

I have named this species in compliment to Mr. Loughrin of Polperro, who is a most indefatigable and intelligent local naturalist, and to whom I am indebted for many interesting specimens of Crustacea.

4. **Dexamine tenuicornis.** (Plate XXIV. fig. 4.)

Amphitoë tenuicornis, *Rathke, Beiträge zur Fauna Norwegens, Nov. Act.* xx. p. 77. pl. 4. f. 3, 1843.
Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. p. 22, 1851.

"Cephalon without a rostrum. Eyes large, reniform. Antennæ very long; the superior pair exceeding a little in length the

inferior. Pleon having the anterior segments carinated and posteriorly produced into teeth. Posterior pair of pleopoda having the rami subequal, foliaceous, lanceolate. Telson absent (?).

"Length 4 lines.

"*Hab.* Drontheim."—*Rathke.*

On a comparison of the parts figured by Rathke with those of *Dexamine spinosa*, the only observable difference is the absence of the tooth at the inferior distal extremity of the first joint of the peduncle of the superior antennæ. In his description, Rathke says that there is no telson; and, singularly enough, Montagu published his figure of *Cancer* (*Gammarus*) *spinosus* without this appendage, as also Prof. Milne-Edwards his figure of *Amphitoë Marionis*. The telson is long, slender, articulated upon a process, and very liable to be dislocated. Certainly Rathke's *tenuicornis* is very closely allied to, if not identical with, Montagu's *spinosus*.

5. Dexamine tricuspis. (Plate XXIV. fig. 5.)

Acanthonotus tricuspis, *Kröyer, Voy. en Scand.* pl. 18. f. 1 *a*.

Cephalon produced into a small rostrum. Last segment of the pereion and the first two of the pleon each dorsally produced into a tooth; third segment of the pleon having the posterior lateral margin ornate. Eyes small. Superior antennæ as long again as the inferior. In other respects the figure of the animal from which I have taken this description appears not to differ materially from *D. spinosa*.

Length ——?

Hab. Arctic Europe (*Kröyer*).

39. ATYLUS.

Atylus, *Leach, Zoological Miscellany*, ii. pl. 69.
Edwards, Hist. des Crust. iii. p. 67.
Iphimedia, *Dana, U. S. Explor. Exped.* p. 926.
Notrotopis, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, p. 170, 1853.

Animal compressed. Antennæ subequal; superior without a secondary appendage. Mandibles with an appendage. Maxillipeds unguiculate, having a squamiform plate developed from the basos and ischium. Gnathopoda subchelate. Pereiopoda subequal. Posterior pleopoda biramous. Telson single, squamiform, divided.

The above generic description is taken from Leach's type, which is preserved in the British Museum.

Atylus differs from *Dexamine* in having the third joint of the peduncle of the upper antennæ distinguishable from the flagellum, and in having an appendage to the mandibles. The species of this genus are generally remarkable for some peculiarity connected with the flagella of the antennæ.

1. **Atylus carinatus.** (Plate XXV. fig. 1; figs. 2 & 3, young.) B.M.

Gammarus carinatus, *Fabricius, Ent. Syst.* ii. p. 515. 3.
Atylus carinatus, *Leach, Zoological Miscellany,* ii. p. 21. pl. 69; *Linn. Trans.* xi. p. 357.
Guérin, Icon. t. 26. f. 6.
Edwards, Hist. des Crust. iii. p. 68.
Amphitoë carinata, *Kröyer, Grön. Amfip.* p. 28. pl. 2. f. 6 *a*; *Voy. en Scand.* pl. 11. f. 1.
Edwards, Hist. des Crust. iii. p. 41.

Cephalon produced anteriorly into a rostrum, slightly depressed. Central dorsal line of the whole animal elevated into a carina. The last two segments of the pereion and the first four of the pleon having the posterior dorsal margin developed into large tooth-like processes. Third segment of the pleon having the inferior margin slightly serrated. Eyes round, small. Antennæ not half as long as the animal, subequal; peduncle as long as the flagellum. Gnathopoda small, subequal; propoda not broader than carpi. Three posterior pairs of pereiopoda having the dactylos reversed in each and the basos unequally developed; the squamiform character, which is almost wanting in the antepenultimate, and but slightly developed in the penultimate, is in the ultimate considerably produced. Three posterior pairs of pleopoda unequal, the penultimate not being longer than the peduncle of the antepenultimate; rami of the antepenultimate reaching rather beyond the extremities of the ultimate, which are naked, subequal, and four times as long as their peduncle. Telson deeply cleft, each division lanceolate.

Length $1\frac{1}{4}$ inch.

Hab. Arctic Seas (*MS. Royal College of Surgeons*); Greenland (*Kröyer*). Dredged in 66° N. lat., 50° W. long. (*Capt. Wareham and Capt. Harrison*).

The foregoing description is taken from the specimen in the British Museum, being that from which Leach drew up his description, and which he states to be the type also of Fabricius's *Gammarus carinatus*.

The habitat of the British Museum specimen is not known; but those in the Hunterian Museum of the College of Surgeons that were entrusted to me are labelled as "Arctic," which, together with Kröyer's record of Greenland as being the habitat from whence he procured his examples, leaves no doubt upon my mind as to the abode of the species.

The young, before they quit the pouch of the parent, attain the length of $\frac{3}{20}$ths of an inch, and I procured from the same animal several in different stages of progress. The cephalon is at first without a rostrum, and the pereion and pleon without teeth; these are gradually developed. The flagella are added to the antennæ

joint by joint; and a uniarticulate secondary appendage is attached to the superior pair of antennæ, which is lost in the adult.

2. **Atylus Huxleyanus**, n. s. (Plate XXV. fig. 4.) B.M.

Male.—Cephalon not produced into a rostrum. Last segment of the percion and first three of the pleon carinated, and each produced posteriorly into a tooth. Eyes round. Superior antennæ scarcely as long as the inferior; flagellum three times as long as the peduncle, having every third articulus inferiorly and distally dilated and crested with auditory cilia. Inferior antennæ half as long as the animal; peduncle scarcely longer than the peduncle of the superior; flagellum having the articuli short, broader than long, carrying upon the superior distal extremity of each a fasciculus of short hairs, which gives to the appendage a serrated appearance. Mandibles having the third joint of the appendage arcuate, and ciliated upon the concave margin with alternate simple and long plumose hairs; incisive margin multidentate; secondary plate powerfully bidentate; molar tubercle long, narrow. Gnathopoda subequal, having the propodos in each oval; palm continuous with the inferior margin, imperfectly defined by two spines fringed with short cilia; dactylos armed with a series of short, equidistant, solitary hairs. Perciopoda subequal, three posterior pairs having the dactyla not reversed. The penultimate pair of pleopoda a little shorter than the antepenultimate; ultimate longer than the two preceding, and edged with a few short stout spines and plumose cilia. Telson long, narrowing to the apex, and cleft, but not deeply, at the apex.

Length $\frac{18}{20}$ths of an inch.

Hab. Hermit Island (*Antarctic Expedition*).

Under the microscope the integument is seen to be granulated, and interspersed with larger spots, which seem to perforate the tissue and support short hairs in each. Larger markings, somewhat resembling the representation of a flying bird, are less profusely scattered over the whole structure.

The species is named in compliment to Prof. Huxley.

3. **Atylus villosus**, n. s. (Plate XXVI. fig. 1.) B.M.

Male.—Cephalon produced into a short rostrum. Percion having the posterior segments carinated. Pleon having the first three segments carinated and posteriorly elevated, but not prolonged into teeth; inferior margins serrated; fourth segment having a deep dorsal sinus, and the posterior margin produced into a tooth; fifth

posteriorly elevated, but not produced into a tooth. Eyes oval. Superior antennæ one-third shorter than the inferior; peduncle half the length of the flagellum, fringed along the inferior margin with thick transverse rows of hairs; flagellum having the articuli long (as long again as wide), with the inferior distal extremity of each dilated into a villose tubercle, supporting a fasciculus of simple hairs and two auditory cilia. Inferior antennæ half the length of the animal; peduncle half the length of the superior antennæ, fringed along the superior margin with thick transverse rows of hairs; flagellum having the articuli one-third shorter than those of the flagellum of the superior antennæ, squamose; superior margin villose, distally dilated, and carrying three stout hairs. Gnathopoda subequal; propoda long-ovate, not broader than carpi; palmæ imperfectly defined, continuous with the inferior margins; superior margin carrying six transverse rows of ciliated hairs. Three posterior pairs of pereiopoda having the basa unequal; antepenultimate not dilated; penultimate a little dilated; ultimate largely dilated. Antepenultimate pair of pleopoda reaching as far as the ultimate, having the margins of both rami fringed with short obtuse spines; penultimate pair scarcely reaching beyond the peduncle of the preceding; ultimate pair having the rami four times as long as the peduncle, and fringed with cilia. Telson deeply divided, each half carrying a blunt subapical spine.

Length $\frac{4}{20}$ths of an inch.

Hab. Hermit Island (*Antarctic Expedition*).

This species is remarkable for the villose tubercles upon both the superior and inferior antennæ; they appear to be arranged as if those upon one pair antagonized with those upon the other, and as if the animal used these organs for the purpose of grasping certain objects.

4. Atylus Swammerdamii. (Plate XXVI. fig. 2.) B.M.

Amphitoë Swammerdamii, *Edwards, Ann. des Sc. Nat.* xx.; *Hist. des Crust.* iii. p. 35.

Dexamine Gordoniana, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

White, Hist. Brit. Crust. p. 178.

Cephalon produced into a minute rostrum. Pleon having the fourth segment with a deep dorsal sinus, the anterior wall of which is produced into a small tooth, and the posterior elevated into a large posteriorly directed tooth. Eyes broad-ovate. Antennæ subequal, about one-half the length of the animal: peduncle of the superior about half the length of that of the inferior; pe-

dunele of the inferior half the length of the antennæ: flagellum scarcely longer than broad; that of the superior pair carrying one hair and one short auditory cilium to each articulus. First pair of gnathopoda smaller than the second. Second pair of gnathopoda like the first; carpus enlarging towards the propodos; propodos gradually narrowing towards the extremity; palm imperfectly defined, ciliated. Pereiopoda short; three posterior pairs having the dactyla reversed. Three posterior pairs of pleopoda subequal; penultimate the shortest; ultimate naked, having the rami twice as long as the peduncle. Telson short, not much longer than broad, deeply cleft, each division carrying a subapical spine.

Length $\frac{1}{4}$ of an inch.

Hab. Moray Frith (*Rev. G. Gordon*); Tenby (*Mr. Webster*); Coast of Morbihan (*M. Edwards*).

5. **Atylus gibbosus**, n. s. (Plate XXVI. fig. 3.) B.M.

Fourth segment of the pleon elevated into an obtuse tooth, which looks like a hump upon the posterior part of the back of the animal. Eyes round. Antennæ slender, subequal, more than half the length of the animal. First pair of gnathopoda slender, having the carpus a little longer than the propodos; propodos having the palm slightly convex, oblique, at a similar angle with the inferior margin, defined by two small hairs. Second pair of gnathopoda a little longer than the first; carpus shorter than the propodos; propodos with the palm oblique, straight, defined. Pereiopoda subequal; in all, the mera are long and the carpi short, and both dilated and produced into an angle posteriorly and distally, and edged with spines as long as the joints are broad; the dactyla are all directed posteriorly. Three posterior pairs of pleopoda unequal, the ultimate being as long again as the two preceding. Telson as long as the posterior pair of pleopoda, pointed, with two short spines on each external edge, cleft from the apex to the base.

Length $\frac{2}{20}$ths of an inch.

Hab. Shetland (*Mr. Barlee*).

6. **Atylus austrinus**, n. s. (Plate XXVI. fig. 4.) B.M.

Dorsal surface not denticulated. Eyes oval. Superior antennæ half as long as the animal; peduncle one-third the length of the flagellum; articuli of the flagellum broader than long, each carrying distally, above and below, short setæ. Inferior antennæ a little

more than half as long as the superior; peduncle as long as the peduncle of the superior. Gnathopoda slender; propoda scarcely broader than carpi. First pair having the propodos ovate; palm not oblique, convex, fringed with short fine cilia; there are two rows of short sharp spines, one near the inferior angle, the second a little posterior. Second pair having the propodos long-ovate; palm oblique; inferior angle defined imperfectly by a lateral row of short spines. Three posterior pairs of perciopoda having the dactylos in each directed anteriorly. Posterior pair of pleopoda naked, and considerably longer than the two preceding pairs. Telson long, cleft for about two-thirds of its length.

Length $\frac{12}{20}$ths of an inch.

Hab. Sydney (*Antarctic Expedition*).

7. Atylus inermis. (Plate XXVI. fig. 5.) B.M.

Amphitoë inermis, *Kröyer, Amfip. Grön.* iii. p. 47. pl. 3. f. 11.
Edw. Hist. des Crust. iii. p. 34.

Dorsal surface not toothed. Rostrum between the superior antennæ rudimentary. Eyes ovate. Superior antennæ one-third shorter than the inferior; peduncle half as long as the flagellum; articuli of the flagellum rather longer than broad, each carrying, at the upper and under distal extremities, a curved seta, and every alternate one also carrying a pair of auditory cilia. Inferior antennæ about half as long as the animal; peduncle rather longer than the peduncle of the superior; articuli of the flagellum broader than long, each carrying curved setæ on its upper and under sides. Gnathopoda subequal, slender, each having the carpus as long as the propodos; the propodos long and narrow; palm oblique, laterally fringed with cilia, and defined by two short sharp spines. Three posterior pairs of perciopoda having their dactyla directed anteriorly. Three posterior pairs of pleopoda gradually increasing in length, ciliated. Telson deeply cleft.

Length $\frac{9}{20}$ths of an inch.

Hab. Sukkertopper, Greenland (*Holböll* and *Kröyer*); North Atlantic (*Mr. Barrett*); Banff (*Mr. Edward*).

The figure and description are taken from an unnamed specimen presented to the British Museum by M. Holböll. In a comparison with Kröyer's figure and Edwards's description, the only observable difference consists in the extreme points of the telson in our specimen being sharp, whereas they represent them as obtuse; but this is a difference unimportant in itself, and one that might be produced by friction, as is often actually the case.

Under the microscope, the surface of the integument is covered with small crescent-shaped scales.

8. Atylus crenulatus. (Plate XXVI. fig. 6.)

Amphitoë crenulata, *Kröyer, Grön. Amfip.* p. 50. pl. 3. f. 12.
Edw. Hist. des Crust. iii. p. 33.
Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl. p. 22, 1851.

Dorsal surface not dentated. Rudimentary rostrum depressed between the superior antennæ. Eyes reniform. Antennæ subequal, half the length of the animal; peduncles not half the length of their respective antennæ. Superior antennæ furnished upon the inferior surface of the peduncle with fasciculi of short stiff hairs. Inferior antennæ furnished upon the superior surface of the peduncle with fasciculi similar to, and corresponding with those upon the superior antennæ. Gnathopoda slender. Posterior pair of pleopoda having the rami lanceolate, ciliated, and longer than the peduncle. Telson deeply cleft, each division long and pointed.

Length (not given).

Hab. Greenland (*Kröyer*).

Edwards describes the telson as consisting of "two lanceolate lamellæ;" but in all other respects the figure given by Kröyer belongs to this genus; hence I am inclined to think the telson to be deeply cleft, and not double.

9. Atylus corallinus.

Atylus corallinus, *Risso, Eur. Mérid.* p. 44.

"Having the thorax smooth, coralline [*corallino*]. Last five segments of the pleon carinated. Eyes grey. All the appendages monodactyle*, third pair longest.

"Length 0·012 by 0·003. Female larger than the male.

"*Hab.* Upon *Fucus spiralis*. South of France."—*Risso.*

The author says that this species differs in many characters from *A. carinatus*; but, as far as so meagre a description can assist one, I am inclined to believe it to be *Dexamine spinosa*.

10. Atylus spinulicauda.

Notrotopis spinulicauda, *Costa, Rend. della Reale Accad. delle Sci. di Napoli*, p. 173, 1853.

"Cephalon armed with a short rostrum. Seventh segment of the pereion and each of the first five of the pleon dorsally and posteriorly produced into a spine: sixth segment carinated, and crowned with

* The term 'monodactyle' is mostly used by older authors when the gnathopoda are small and slender; Leach in his description of this genus states them to be monodactyle, but observation shows them to be subchelate. The terms 'monodactyle' and 'prehensile' possess too broad a signification to be useful in description.

a spinule. Antennæ subequal, having the peduncle of the inferior considerably longer than that of the superior. Three posterior pairs of pleopoda unequal, the fourth and sixth being much longer than the fifth.

"Length 5 lines.

"*Hab.* South of Europe."—*Risso.*

11. Atylus bispinosus. (Plate XXVII. fig. 1.) B.M.

Dexamine bispinosa, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

White, Hist. Brit. Crust. p. 178.

Cephalon produced into a small flat rostrum. The first two segments of the pleon dorsally produced posteriorly into strong teeth; the third having the posterior lateral margins ornately waved and serrated. Eyes broad-ovate, white, with a central black spot. Antennæ long, slender: superior pair half the length of the animal, having the peduncle scarcely longer than the cephalon; inferior pair two-thirds as long as the animal, having the peduncle reaching a little beyond the peduncle of the superior. Gnathopoda subequal, uniform, having the propoda scarcely broader than the carpi; palmæ oblique, fringed with unequal spines; dactyla armed with a single tooth parallel with, and near the apex, and two small hairs. Posterior pair of pleopoda reaching considerably beyond the two preceding pairs.

Length $\frac{1}{4}$ of an inch.

Hab. Plymouth, dredged on a sandy bottom in Whitsand Bay near the Rame Head (*T. P. Smyth* and *C. S. B.*); Penzance (*Mr. Harris*); Moray Frith (*Rev. G. Gordon*); Macduff (*Mr. Gregor*); Falmouth and Tenby (*Mr. Webster*); Northumberland (*Mr. Alder*).

Under the microscope the integument is seen to be profusely covered with minute scales, each forming a small segment of a circle. The colour of the animal, when alive, was a greenish-grey, mottled with black and yellow pigment-cells, particularly along the line of the alimentary canal and upon the dorsal surface of the pleon.

12. Atylus simplex. (Plate XXVII. fig. 2.)

Iphimedia simplex, *Dana, U.S. Explor. Exped.* p. 926. pl. 63. f. 2.

"Body compressed, naked. Eyes round. Antennæ nearly naked: inferior pair half as long as the body; base short, less than half the length of the flagellum; articuli of flagellum transverse: superior pair a little shorter than inferior; base scarcely shorter than base of inferior; a few articuli at remote intervals produced below. Propodos of first pair of gnathopoda moderately small, narrow-

ovate, apex subacute; propodos of second pair (female?) much smaller, but similar in form. Pereiopoda all short; first and second pairs longer than the second pair of gnathopoda, subequal; last two pairs subequal; basos very broad, its posterior margin imperfectly serrulate.

"Length 4 to 5 lines.

"*Hab.* Collected at Hermit Island by Lieut. Case."—*Dana.*

13. Atylus fissicauda. (Plate XXVII. fig. 3.)

Iphimedia fissicauda, *Dana, U.S. Explor. Exped.* p. 929. pl. 63. f. 4.
Amphitoë fissicauda, *Dana, Proc. Amer. Acad. Sci. Bost.* iii. p. 214.

"Body compressed. Coxæ large. Eyes reniform. Telson divided nearly to the base, and each part emarginate at apex. Antennæ subequal: the superior rather the longer, half as long as the body; base much shorter than the flagellum, and a little shorter than the base of the inferior pair; setæ of under side of antennæ rather long; peduncle of inferior pair much shorter than the flagellum. First pair of gnathopoda small; propodos oblique at apex (palm), and not broader. Propodos of the second pair of gnathopoda moderately small, ciliated below; apex (palm) slightly oblique; dactylos short. Three posterior pairs of pereiopoda subequal, rather short; setæ short. Posterior pair of pleopoda long.

"Length (not given).

"*Hab.* Near Viña del Mar, nine miles north of Valparaiso, from pools of water among rocks of the sea-shore at low-tide, where it occurs concealed among the stones of the bottom."—*Dana.*

14. Atylus Capensis. (Plate XXVII. fig. 4.)

Iphimedia Capensis, *Dana, U.S. Explor. Exped.* p. 931. pl. 63. f. 5.

"*Female?*—Eyes subreniform. Antennæ subequal, nearly naked. Superior pair rather the longer, about half as long as the body; peduncle very short, about one-third as long as the flagellum; joints of the flagellum somewhat oblong, the alternate ones a little broader at the apex, and bearing two or three setæ longer than the joint and closely appressed to it, the other setæ very short. Peduncle of inferior pair quite short. Two pairs of gnathopoda small; propoda oblong, margins nearly parallel, under margins hirsute, apices oblique, truncate, forming the palmæ; dactyla not longer than the palmæ, palmæ nearly naked; carpi oblong, half as long as the propoda, obtuse below and hirsute. Four posterior pairs of pereiopoda subequal, slender, setæ all very short; propoda slender; setæ of lower margin in seven sets, and about half

as long as breadth of joint, those of the upper margin shorter. Three posterior pairs of pleopoda with numerous spinules; the branches of the antepenultimate pair styliform, those of the last pair rather long and narrow, foliaceous, acuminate; margins edged with many spinules.

"Length 4 lines.

"*Hab.* Cape of Good Hope."—*Dana.*

15. Atylus vulgaris.

Iphimedia vulgaris, *Stimpson, Marine Invert. of Grand Manan*, p. 53.

"Smooth, subcompressed. Pleon with segments slightly projecting at the articulations, but not dentated. Head large, with very large reniform eyes, which are colourless in preserved specimens. Antennæ subequal, with very long, slender, filiform flagella, and in length about equalling that of the body; the superior ones thick-based, and a little the larger. Mandibles with sharp curved apices, and large appendages consisting of three joints, the basal one of which is very short, the second broad, and the terminal one very slender. Maxillipeds slender, pointed, with large internal lamellæ. Gnathopoda small, those of the first pair the larger. Perciopoda very slender, terminating in curved dactyla. Three anterior pairs of pleopoda well developed; the two penultimate pairs almost acicular, with small spines above; posterior pair with broad lancet-shaped rami. Telson terminating in two lamelliform spines. Colour variable, generally dark-mottled purplish.

"Length of a large specimen about 0·4 inch.

"*Hab.* In little pools left by the tide among the rocks near low-water mark. They are very active, swimming about in all directions, and seldom resting long in one place."—*Stimpson.*

Stimpson says that this species differs but slightly from *A. inermis*, Kröyer. He also describes the "tail" as "terminating in two lamelliform spines;" but it is not sufficiently clear from this whether the telson is only divided or double.

16. Atylus compressus.

Amphitoë compressa, *Liljeborg, Ofvers. af Kongl. Vetensk. Akad. Forhandl.* p. 8, 1852.

"Body considerably compressed; dorsal line throughout its whole length carinated. Coxæ large. Cephalon with a compressed, acute, deflexed rostrum. Fourth, fifth and sixth segments of the pleon each furnished with a single tooth on the median dorsal line, that on the fifth being the greatest, and that on the sixth the smallest. Eyes large, reniform, black. Inferior pair of antennæ

longer than the superior; peduncle of the superior antennæ with the first and second joints subequal, and with the last smallest; peduncle of the inferior antennæ with the last joint longer than the penultimate. Gnathopoda subchelate and subequal; propoda oval, of medium size. Last pair of pleopoda? Telson divided, each lamina lanceolate.

"Length about 6 mm.

"*Hab.* Kullaberg. Only two specimens have been taken, from a depth of from 12 to 15 fathoms, in one of which larvæ were present in the ovigerous pouch.

"It much resembles *Amphitoë* (*Dexamine*) *tenuicornis* of Rathke." —*Liljeborg.*

40. PHERUSA.

Pherusa, *Leach, Edinb. Encyc.* vii. p. 432; *Trans. Linn. Soc.* xi. p. 360.
Desmarest, Consid. sur les Crust. p. 269. pl. 44.
Koch, Deutschlands Crustaceen, &c. Heft xxiv. p. 34.
Amphitoë, *Edwards, Hist. des Crust.* iii. p. 32; *Ann. des Sci. Nat.* xx. p. 376.
Dana, U. S. Explor. Exped. p. 910 (includes *Pherusa*).
Titanethes*, *Schiödte, Danske Vid. Selsk. Skr. anden Række*, ii.

This genus differs from *Atylus* in the form of the telson only (it is cleft in *Atylus*, entire in *Pherusa*), and from *Calliope* in the form and size of the gnathopoda.

1. Pherusa pulchella. (Plate XXVII. fig. 5.)

Amphitoë pulchella, *Kröyer, Voy. en Scand.* pl. 10. f. 2.

Dorsal surface of each of the last three segments of the pereion produced into a tooth, as also the first three segments of the pleon; the third segment of the pleon having a small protuberance anterior to the large dorsal tooth and at the upper portion of the posterior margin. Superior antennæ longer than the inferior. Gnathopoda uniform. Coxæ tapering anteriorly, and serrated upon the inferior half of the posterior margins. Pereiopoda subequal, slender. Telson ovate.

Length ——?

Hab. Greenland (*Kröyer*).

This species is described from Kröyer's figure in the work cited. It bears a general resemblance to *Atylus Huxleyanus*.

2. Pherusa cirrus, n. s. (Plate XXVII. fig. 6.) B.M.

Cephalon produced into a flat rostrum. First two segments of the pleon dorsally produced into teeth; the third segment having the

* I have obtained this synonym from page 1594 of Dana's great work, not having seen Schiödte's paper.

posterior lateral margin entire. Eyes subreniform, black. Superior antennæ nearly half as long as the animal: peduncle nearly half as long as the flagellum: first joint of the peduncle as long as the cephalon, broad and robust: second not half as long as the first: the third still shorter. Inferior pair not longer than the superior: peduncle half the length of the superior antennæ: small tufts of hairs are placed at tolerably regular distances upon the under side of the peduncle of the superior, and the upper side of the peduncle of the inferior antennæ. Telson long, entire. In other respects the animal does not differ materially from that of *Atylus bispinosus*, except in the appearance of the integument under the microscope, which in this species offers nothing remarkable.

Length about $\frac{6}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*); Tenby and Falmouth (*Mr. Webster*).

3. **Pherusa bicuspis.** (Plate XXVII. fig. 7.)

Amphitoë bicuspis, *Kröyer, Grön. Amfip.* p. 45. pl. 1. f. 1.
Edw. Hist. des Crust. iii. p. 38.

This species appears to differ from *P. cirrus* in the greater length and more slender form of the antennæ, particularly of the superior pair, and in having no antagonizing tufts of hairs upon the two pairs; in the greater length of the dactyla upon the gnathopoda, and in the posterior pair of pleopoda being shorter.

Hab. Greenland (*Kröyer*).

Some specimens taken at Sligo, Bangor (co. Down), and Belfast Bay, in 6 to 10 fathoms, by Mr. Thompson, belong probably to this species; they are in his collection of Irish Amphipoda, for an examination of which I am indebted to Mr. Westwood, to whom they were entrusted by their late owner.

4. **Pherusa costata.** (Plate XXVII. fig. 8.)

Amphitoë costata, *Edw. Ann. des Sc. Nat.* xxv. p. 374. pl. 10. f. 14: *Hist. des Crust.* iii. p. 39.

"Pereion smooth above, but furnished on each side with a prominent ridge, formed by a series of elongated eminences, which occupy the inferior part of each segment, and are prolonged posteriorly in the form of spines. The peduncle of the superior antennæ is formed of three joints, the length of each of which gradually decreases; the flagellum consists of about thirty articuli. The peduncle of the inferior antennæ reaches a little beyond that of the superior; the flagellum is very long, and consists of about fifty articuli. Eyes circular. Appendages to the mandibles very large, consisting of *four* joints*. First pair of gnathopoda a trifle larger

* Fig. 16, *l. c.*, shows but three. This is the normal number.

than the second pair; propodos ovate, and slightly fringed with spines along the inferior margin and palm. Pereiopoda rather short. The first three* segments of the pleon are elevated into a crest upon the median line, and prolonged posteriorly in the form of sharp teeth. The posterior pair of pleopoda terminate in two long rami that extend considerably beyond the preceding. Telson elongate, lanceolate, and slightly trifid at the end.

"Length $\frac{1}{20}$ths of an inch.

"*Hab.* Isle of Bourbon."—*M. Edwards.*

5. Pherusa podura.

Gammarus podurus, *Müller*, *Zool. Dan.* iv. p. 59. pl. 16. f. 1–6.
Cancer (Gammarellus) podurus, *Herbst*, *Naturg. der Krabben*, ii. p. 119. pl. 25. f. 6 (after *Müller*).
Amphitoë podura, *Edw. Ann. des Sc. Nat.* xx. p. 376; *Hist. des Crust.* iii. p. 38.

"Superior antennæ nearly as long as the inferior. Gnathopoda small; propoda small, ovate. Posterior margins of the fourth and fifth segments of the pleon furnished with a row of spines.

"*Hab.* The coasts of Scandinavia."—*M. Edwards.*

6. Pherusa fucicola. (Plate XXVII. fig. 9.) B.M.

Pherusa fucicola, *Leach*, *Edinb. Encyc.* vii. Art. *Crustaceology*, *Appendix*, p. 432; *Trans. Linn. Soc.* xi. p. 360.
Desmarest, *Consid. sur les Crust.* p. 269. pl. 45. f. 10.
Amphitoë fucicola, *Edwards*, *Ann. des Sc. Nat.* xx. p. 377; *Hist. des Crust.* iii. p. 32.
Thompson, *Nat. Hist. of Ireland*, iv. p. 396.
Amphitoë Jurinii, *Edwards*, *Ann. des Sc. Nat.* xx. p. 376; *Hist. des Crust.* iii. p. 30. pl. 1. f. 2.
Bell, *App. Belcher's Last of the Arctic Voyages*, p. 406.
Amphitoë microura, *Costa*, *Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 175.
Dexamine fucicola, *Spence Bate*, *Synopsis*, *&c.*, *Ann. Nat. Hist.* Feb. 1857.
White, *Hist. Brit. Crust.* p. 179.

Cephalon produced into a very minute rostrum that is generally hid between the antennæ. Eyes small. Superior antennæ scarcely half as long as the animal; peduncle about one-fourth the length of the antennæ. Inferior antennæ scarcely as long as the superior; peduncle reaching rather beyond the peduncle of the superior. Gnathopoda subequal, resembling each other in form; second pair rather the larger, having the propodos gradually increasing towards the palm, which is slightly oblique and a little convex, the inferior angle being somewhat rounded. Pereiopoda subequal,

* Fig. 14, *l. c.*, represents the first two segments only of the pleon as denticulated.

tolerably long, and well developed. Posterior pair of pleopoda extending some distance beyond the ante- and penultimate pairs. Telson squamiform, rounded at the apex. Colour of the animal when alive light amber, marked with small rose-coloured bands.

Length $\frac{7}{20}$ths of an inch.

Hab. Falmouth and Tenby (*Mr. Webster*); Youghal, Ireland (*Dr. Ball*: Ann. Nat. Hist. Oct. 1847); Polperro (*Mr. Loughrin*); Banff (*Mr. Edward*); Coast of Naples (*Costa*); Isle of Chausay (*Edwards*).

The specimens that I have procured agree in every particular with Leach's very meagre description in the 'Edinb. Encyc.,' both as to colour and the form of the gnathopoda, and resemble M.-Edwards's figure and description of *Amphithoë Jurinii*. But M.-Edwards states that *P. fucicola* differs in "the great inequality which exists in the first and second pairs of gnathopoda," which is evidently an error, since Leach classifies it with those that have "four anterior feet with a filiform hand."

7. **Pherusa Barretti**, n. s. (Plate XXVII. fig. 10.) B.M.

Cephalon produced into a small depressed rostrum. Third segment of the pleon having the posterior margin laterally produced near the middle into a long upcurved tooth. Eyes large, subreniform. Superior antennæ one-third as long as the animal; peduncle stout at the base, having the first joint distally produced inferiorly; second and third joints not so long as the first. Inferior antennæ somewhat longer than the superior; peduncle having the fourth joint reaching as far as the extremity of the peduncle of the superior. Gnathopoda minute, uniform. Posterior pair of pleopoda not exceeding the penultimate in length. In other respects the animal resembles *P. fucicola*; and it may, without close examination, be mistaken for *Atylus inermis*.

Length about $\frac{1}{2}$ an inch.

Hab. North Atlantic (*Mr. Barrett*).

It is named in compliment to the industrious naturalist who discovered it.

41. PARAMPHITHOË.

Paramphithoë, *Bruzelius, Kong. Vet. Akad. Handl.* 1858.
Acanthosoma, *Owen, Appendix to Ross's Second Voyage in Search of a N.W. Passage*, p. xci.

Cephalon vaulted. Eyes prominent. Upper antennæ not so long as the lower; third joint of the peduncle scarcely distinct from the flagellum. Mandibles having an appendage. Gnathopoda subchelate, small, feeble, submembranaceous; second pair not larger than the first. Posterior pair of pleopoda biramous. Telson single.

This genus appears to be closely allied to *Dexamine* and *Atylus*:

from the former it is distinguished by the mandibles being furnished with an appendage, and the telson being entire; from the latter in the form of the superior antennæ, as also in that of the telson. The separation from *Atylus* may be somewhat arbitrary, but very convenient, in consequence of the singular form of the only species known. The name *Acanthosoma* having been previously used for a genus of Coleoptera, I have adopted that proposed by Bruzelius. I know of this author's work only through a short notice in the 'American Journal of Science' for Nov. 1859. It appears to me that he has fallen into the same error that Costa has in *Amphithonotus*, and united several distinct genera. *Pleustes panoplus*, *Paramphithoë hystrix*, and *Pherusa bicuspis* have characters essentially distinct, and it is only by giving undue importance to the development of the dorsal teeth that they have been united.

1. **Paramphithoë hystrix.** (Plate XXVIII. fig. 1.) B.M.

Paramphithoë hystrix, *Bruzelius, Kong. Vet. Akad. Handl.* 1858.
Acanthosoma hystrix, *Owen, Appendix to Ross's Second Voyage in Search of a N. W. Passage*, p. xci. pl. B. f. 4.
Bell, App. to Belcher's Last of the Arctic Voyages, p. 146.
Amphithoë histrix, *Kröyer, Grön. Amfip.* t. xi. f. 7.
Edwards, Hist. des Crust. iii. p. 40.

Cephalon furnished with a very minute rostrum. First segment of the pereion having a large central dorsal tooth projecting upwards and forwards on the anterior margin, a small marginal one on each side, and an inferior lateral one near the coxal margin; on the posterior margin a large central dorsal spine directed upwards and backwards, and upon each side a small lateral one directed backwards; the six remaining segments of the pereion are each furnished with a very large central dorsal and a large lateral tooth on each side of the posterior margin, and a lateral central one slightly above the coxal margin. The first two segments of the pleon have upon the posterior margin one central, and upon each side two large lateral teeth, besides the inferior distal angle, which is similarly developed, and a small tooth intermediate between it and the inferior lateral; the third segment carries a large central, and on each side a long lateral tooth, besides the inferior distal extremity; the fourth segment carries a minute central and a sublateral spine; the fifth a sublateral spine only. Eyes round, projecting. Superior pair of antennæ having the first joint of the peduncle longer than the second, and distally armed superiorly with a long spine; second longer than the third; third not so long as the first of the flagellum; flagellum nearly twice as long as the peduncle. Inferior pair of antennæ half as long again as the superior; third joint of the peduncle armed with a spine upon the inferior and distal extremity, fourth and fifth joints subequal; flagellum scarcely longer than the peduncle. Gnathopoda similar in

form, each pair having the coxa produced anteriorly and inferiorly to a point; carpus nearly as long as the propodos; propodos gradually increasing in breadth to the palm; palm scarcely oblique, fringed with short spines, and near the inferior angle with longer ones. Pereiopoda subequal: first pair of pereiopoda having the coxa produced inferiorly into one tooth, the second pair into two; the third have the anterior division developed into a tooth, and the posterior rounded, having the tooth near the centre; the coxæ of the two posterior pairs are similarly formed, and each of the last three has the basos posteriorly emarginate and furnished with a tooth near the upper and lower posterior extremities. Fourth and sixth pairs of pleopoda extending to nearly the same length, the intermediate one being much shorter. Telson subacute, lanceolate. The eyes are stated by Sir James Ross to be white. The integument is covered all over with minute semicircular scales.

Length about 1 inch.

Hab. Greenland, where it lives on *Asterias rugens* (*Holböll*, MS. B.M.); Felix Harbour and Igoolik (*Sir James Ross*, Collection in Mus. Roy. Coll. Surg.). Mr. A. White has received it from Wolstenholme Sound from Mr. Ede.

42. CALLIOPE.

Calliope, *Leach, MS. Brit. Mus.*
Spence Bate, Report Brit. Assoc. 1855; *Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 179.

Superior antennæ without a secondary appendage. Mandibles furnished with an appendage. Gnathopoda having the propoda in the second or both pairs largely developed, and the carpi inferiorly produced. Telson not divided.

Although, in appearance, the type of this genus is very distinct from that of *Atylus* and *Acanthosoma*, I think the species will be found gradually to run one into the other. In *Atylus Huxleyanus* the telson is scarcely more than emarginate; and the only reliable distinction exists in the gnathopoda of *Calliope* being stronger and more powerful organs than in the other two genera. The arrangement may be convenient, but the grouping is scarcely natural.

1. Calliope læviuscula. (Plate XXVIII. fig. 2.) B.M.

Amphithoë læviuscula, *Kröyer, Grön. Amfip.* p. 53. t. 3. f. 13.
Edw. Hist. des Crust. t. iii. p. 30.
Bell, Append. to Belcher's Last of the Arctic Voyages, p. 405.
Calliope Leachii, *Spence Bate, Brit. Assoc. Report*, 1855; *Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 179.

Cephalon furnished with a very minute rostrum, curved down between the superior antennæ. Three anterior segments of the pleon dor-

sally elevated posteriorly; the fourth broadly but not deeply sinuated. Eyes large, black, irregularly rounded. Antennæ subequal. Superior pair having the joints of the peduncle subequal, the third furnished inferiorly with a tooth; first articulus of the flagellum as long as the three succeeding; all the articuli of the flagellum inferiorly and distally produced, each being furnished with one long and several short hairs and a single auditory cilium. Inferior pair of antennæ having the peduncle as long as the peduncle of the superior; flagellum having the articuli equal, not longer than broad, tufted laterally and inferiorly with short hairs. Gnathopoda subequal, having the propodos in each ovate; palm oblique, not well defined, fringed with a few tufts of hairs; dactylos impinging along the whole palm; carpus inferiorly produced. Pereiopoda subequal; dactyla slightly curved and very strong. Telson lanceolate, subacute. The integument is covered with semicircular scales.

Length $\frac{1}{2}$ an inch.

Hab. Moray Frith (*Rev. G. Gordon*); Banff (*Mr. Edward*); Devonshire? (*Dr. Leach*); Tenby (dredged) (*Mr. Webster*).

2. **Calliope Ossiani**, n. s. (Plate XXVIII. fig. 3.) B.M.

Female.—Cephalon with a very minute rostrum. Three anterior segments of the pleon dorsally elevated posteriorly and slightly carinated. Antennæ subequal; peduncle of the superior reaching rather beyond that of the inferior. First pair of gnathopoda smaller than the second; carpus longer than the propodos, anteriorly and posteriorly produced into a rounded form; propodos broader near the middle; palm oblique, not defined; dactylos half the length of the propodos. Second pair of gnathopoda much larger than the first; carpus much shorter than the propodos, and anteriorly and inferiorly produced to an angle; propodos arcuate above; palm imperfectly serrated, not oblique, defined by several short blunt spines, each furnished with a subapical cilium, inferior angle rounded; dactylos arched, fringed on the inner side with a row of solitary short vertical cilia. Pereiopoda subequal. Penultimate pair of pleopoda reaching as far as the ultimate. Telson obtusely lanceolate.

Length $\frac{1}{2}$ an inch.

Hab. Banff (*Mr. Edward*).

3. **Calliope grandoculis**, n. s. (Plate XXVIII. fig. 4.) B.M.

Eyes very large, slightly reniform, occupying more than a third of the cephalon. Superior antennæ having the peduncle scarcely

longer than the cephalon, the third joint being distally produced inferiorly; flagellum scarcely longer than the peduncle, each articulus having the distal extremity produced. Inferior antennæ much more slender than the superior; the peduncle scarcely reaching to the extremity of the peduncle of the superior pair; flagellum reaching as far as the superior antennæ. Gnathopoda uniform, having the carpi continuous with the propoda, forming together a long oval; palmæ imperfectly defined, oblique, slightly convex, and continuous with the inferior margin, armed with a few hairs. Perciopoda subequal; posterior pair of pleopoda lanceolate, clean. Telson membranous, obtusely ovate.

Length $\frac{3}{20}$ths of an inch.

Hab. Moray Frith (*Rev. G. Gordon*).

4. Calliope Norvegica.

Amphithoë Norvegica, *Rathke, Beitr. zur Faun. Norwegens, Nov. Act. Acad. Leop.-Carol. Nat. Cur.* 1843.

"Cephalon without a rostrum. Eyes small, round. Back smooth. Inferior antennæ nearly as long again as the superior. Propodos of the second pair of gnathopoda much larger than that of the first pair. Last joint (? propodos) of the posterior pair of perciopoda dilated*. Last pair of pleopoda longer than the penultimate, furnished with two nearly equal lanceolate rami. Telson single, pointed, foliaceous.

"Length 4 lines.

"*Hab.* Christiansund."—*Rathke.*

43. AMPHITHONOTUS.

Amphithonotus, *Costa, in Cat. Crost. Ital. per Fr. Gugl. Hope, Napoli,* 1851.

Body not laterally compressed. Cephalon produced into a rostrum. Antennæ slender, without secondary appendage. Mandibles having an appendage. Squamiform plates to the maxillipeds not largely developed. Gnathopoda similarly formed, subequal, having the carpi inferiorly produced. Perciopoda subequal. Posterior pair of pleopoda double-branched. Telson single, cleft at the apex.

This genus closely approaches *Calliope*, but is very distinguishable in its general appearance; among other differences, the absence of lateral compression is the most palpable. Costa has formed this genus to receive *Amphithoë Marionis* of Edwards, and *A. panopla* and *A. carinata* of Kröyer; and Mr. Stimpson believes it to be synonymous with Owen's genus *Acanthosoma*. But as *Amphithoë Marionis* is a synonym of *Dexamine spinosa* of Montagu, as *A. panopla* belongs

* "latiusculo."—*Auct. text, l. c.*

to the genus *Pleustes*, and as *A. carinata* is synonymous with *Atylus carinatus*, it is impossible to admit Costa's new genus for either, as, without doubt, *Dexamine*, *Pleustes*, and *Atylus* are distinct genera. I have drawn up the generic characters from the *Amphithonotus Edwardsii*, which appears to differ only specifically from *Amphithonotus spiniventris*.

1. Amphithonotus spiniventris.

Amphithonotus spiniventris, *Costa, Rend. del. Reale Accad. del. Sc. di Napoli*, 1853, p. 167.

"Cephalon minutely rostrated. Pereion broad, unarmed. Pleon having each segment dorsally carinated and posteriorly produced into a tooth; the three anterior segments being also laterally carinated and produced into a tooth. Antennæ subequal; the peduncle of the inferior not exceeding that of the superior.

"Length $3\frac{1}{2}$ lines.

"*Hab.* Coast of Naples."—*Costa*.

2. Amphithonotus Edwardsii. (Plate XXVIII. fig. 5.) B.M.

Amphithoë Edwardsii, *Ross. Suppl. Second Voyage*, p. 90: *App. to Parry's Third Voyage*, p. 119; *and Polar Voyage*, p. 205.

Talitrus Edwardsii, *Sabine, Suppl. App. to Parry's First Voyage*, p. 223. t. 2. f. 1.

Dexamine Edwardsii, *Cat. Crust. Mus. Roy. Coll. Surgeons*, p. 94.

Cephalon posteriorly elevated into a tubercle, anteriorly depressed and produced into a long rostrum, the median line of which is depressed and the marginal ones elevated. The first five segments of the pereion not carinated, but posteriorly elevated, giving an imbricated appearance on a lateral examination; the last two segments of the pereion and the first four of the pleon are each dorsally carinated and posteriorly produced into a long central tooth, and also, except the fourth segment of the abdomen, laterally ridged and produced posteriorly into a strong tooth, which increases in length on every posteriorly succeeding segment. Eyes large, subreniform, prominent. Superior antennæ one-third shorter than the inferior; peduncle nearly as long as the peduncle of the inferior; third joint shorter than either of the preceding; last two joints of the peduncle of the inferior pair subequal, and each longer than the preceding; articuli on the flagellum of each antenna short, and infero-anteriorly slightly angulated. Mandibles having the third joint of the appendage longer than the other two. Gnathopoda resembling each other, except the coxæ, and subequal: coxa of the first pair produced anteriorly beyond the cephalon; the propodos is long-ovate, somewhat tapering to the

apex; palm very oblique, slightly convex, not defined; carpus short, not longer than the breadth of the propodos, inferiorly produced. First two pairs of pereiopoda smaller than the three posterior, sparsely ciliated; coxa of each of the three posterior pairs double-plated, the basos articulating between them; the basos produced posteriorly and superiorly, excavate beneath, but less in the posterior pair, where the infero-posterior angle is produced into a tooth; dactylos long, styliform. Three posterior pairs of pleopoda subequal, the penultimate being rather the longest; the rami clean, lanceolate. Telson long, narrow, pointed, the apex being split like a pen.

Length about $1\frac{1}{4}$ inch.

Hab. Baffin's Bay (*Sir J. Parry*). The drawing and description are taken from a female specimen in the British Museum. Spitzbergen: presented to the British Museum by the Lords of the Admiralty. Igoolik, where it is especially abundant (*Sir James C. Ross*, Appendix to Second Voyage in Search of a N.W. Passage, p. xc). Northern Ocean: Specimen 323 E, Hunterian Museum (*Sir John Franklin, R.N.*, 1818).

3. Amphithonotus cataphractus.

Amphitonotus cataphractus, *Stimpson, Marine Invert. of Grand Manan*, p. 52.

"Body robust. Pereion very stout, with seven carinæ extending for greater or less distances on the back and sides: viz. one strong median dorsal carina commencing on the first segment, becoming strongly dentate on the last, and ceasing on the second segment of the pleon; the next two carinæ (proceeding outwards) are developed in the form of strong teeth on the last two segments of the pereion and on all the segments of the pleon, being spine-like on the second, and almost lamelliform on the last four segments of the pleon; the next two carinæ are sharp ridges extending along the bases of the coxæ, and slightly continued on the first two segments of the pleon; the last two or outer carinæ are very short, extending only along the basa of the last three pairs of pereiopoda. Coxæ large, angular. Cephalon with very large, rounded, convex eyes, and a rostrum of great size, which is elongate-triangular, pointed, curving downwards, concave above, and with a sharp median ridge below. Antennæ slender, about equal in length, and one-fourth the length of the body. Gnathopoda subequal; the propoda large, ovate, dentate below; dactyla curved, and about two-thirds the length of the propoda: carpi* inferiorly produced. Pereiopoda slender: basa of the three posterior pairs but slightly

* "Antepenult joints with slight thumbs."—*Auct. text.*

expanded. Pleopoda biramous; external rami of the last two pairs shorter than the inner ones. Telson lamelliform, subquadrate. Colour very variable, generally dark reddish or brown, variegated and mottled with white. Some specimens were of a uniform deep purple, others pure white. Eyes yellowish or vermilion-coloured, with a black dot in the middle.

"Length $\frac{1}{2}$ an inch.

"This is one of the most curious and by far the finest species taken. It occurred only once, but then in considerable numbers, in ten fathoms, on a sandy bottom, inside of Duck Island Ledge.

"In its very hard pereion* and large strong coxæ, it possesses great security; and, when disturbed, it rolls itself up and remains quiescent, as if feigning death: most other Amphipods will, on the contrary, endeavour to escape when molested. When in motion, this animal preserves an erect posture, like the Isopods, with the pleon bent underneath. It seldom swims, but makes powerful leaps by means of its well-developed pleopoda."—*Stimpson.*

This species differs from *A. Edwardsii* in having the telson resembling *Acanthosoma*; but this is a character that Costa has not given: and as I have not seen the type of the genus, I cannot take upon myself the responsibility of expelling Stimpson's species, though *A. cataphractus* can scarcely belong to the same genus as *A. Edwardsii*.

4. Amphithonotus acanthophthalmus.

Amphithonotus acanthophthalmus, *A. Costa, Cat. dei Crost. Ital. per Fr. Gugl. Hope*, p. 45, 1851.

"Resembles *Dexamine spinosa*†, from which it differs principally in having a short spine situated on each side of the cephalon anteriorly to the eyes. Basos of the posterior pair of pereiopoda not very broad.

"Length $4\frac{1}{2}$ lines.

"*Hab.* Neapolitan Sea, during the month of February. In Costa's private collection."—*Costa.*

44. EPIMERIA.

Epimeria, *A. Costa, Cat. dei Crost. Ital. per Fr. Gugl. Hope*, p. 46.

"This genus is closely allied to *Amphithoë* and *Amphithonotus*. Coxæ of the first and second pairs of pereiopoda long‡, the rest considerably broader§, forming together a shield, often inferiorly emarginate. Back as in *Amphithonotus*."—*Costa.*

Amphithoë has well-marked characters that widely separate it from either of the animals that Costa intended to embrace within his genus *Amphithonotus*, and no less so from the present description of

* "carapax."—*Auct. text.*
† "*Amph. Marionis*," Auct. text.
‡ "clatis."—*Auct. text.*
§ "majoribus."—*Auct. text.*

Epimeria, which, as far as it, together with the following description of the species, enables me to offer an opinion, differs in nothing from *Acanthonotus* of Owen, of which probably it is a synonym, as *E. tricristata* appears closely to resemble *A. Testudo* of Montagu.

1. Epimeria tricristata.

Epimeria tricristata, *A. Costa, Cat. dei Crost. Ital. per Fr. Gugl. Hope*, p. 46.

"Last segment of the thorax and first four of the pleon dorsally carinated, and posteriorly produced into a tooth. The four anterior segments of the pleon also have a lateral obsolete carina, and are produced posteriorly into spiniform teeth, the third and fourth being inferiorly and posteriorly angulated. Coxa of the first pair of pereiopoda with an infero-anterior angle, coxa of the second with an infero-posterior angle obliquely produced, and together forming an inferiorly emargino-semilunate shield. Antennæ resembling those of *Atylus carinatus*. Gnathopoda of medium size; second pair rather the larger; propoda compressed, oval.

"Length 6 lines.

"*Hab.* Coast of Naples."—*A. Costa.*

45. EUSIRUS.

Eusirus, *Kröyer, Tidskr.* (2) i. p. 501.

Cephalon not rostrated. Pereion and pleon compressed, much resembling *Atylus*. Superior antennæ long and slender, having a secondary appendage; inferior antennæ having the peduncle longer than the peduncle of the superior. Mandibles having an appendage. Maxillipeds unguiculate, having a small squamous plate to the coxa, basos, and ischium. Gnathopoda uniform, each having the propodos large, with the postero-inferior margin posteriorly produced; carpus attached to the propodos near the centre of its superior margin; infero-anterior margin produced along the inferior margin of the propodos. Pereiopoda slender, subequal. Posterior pair of pleopoda biramous. Telson long, narrow, cleft at the apex.

1. Eusirus cuspidatus.

(Plate XXVIII. fig. 6; fig. 7, young.) B.M.

Eusirus cuspidatus, *Kröyer, Tidskr.* (2) i. p. 501. pl. 7. f. 1; *Voyage en Scand.* pl. 19. f. 2.

Pereion having the posterior dorsal margin of the last two segments produced into teeth. Pleon having the first two segments similarly produced; fourth segment having a central dorsal sinus. Eyes

reniform. Superior antennæ scarcely half as long as the animal; peduncle not so long as the flagellum; flagellum minutely articulated, articuli as broad again as long, having cilia attached to every other articulus, which is inferiorly and distally minutely produced; secondary appendage almost obsolete, uniarticulate. Inferior antennæ scarcely as long as the superior, having the peduncle much longer than the peduncle of the superior; flagellum scarcely longer than the last joint of the peduncle. First pair of gnathopoda having the carpus attached near the centre of the superior margin of the propodos, and produced along the inferior margin as far as the palm; propodos subquadrate; palm slightly oblique and a little convex, and defined by a lateral groove near the inferior angle. Second pair like the first, both in form and size. Penultimate pair of pleopoda shorter than the preceding; ultimate reaching rather beyond the antepenultimate. Telson long, narrow, grooved longitudinally, and cleft at the apex.

Length $1\frac{1}{4}$ inch.

Hab. Greenland, dredged in from 50 to 60 fathoms (*Holböll*); and in lat. 66° 50′ N., long. 68° W., in from 12 to 15 fathoms (*Captains Warham and Harrison*).

The young, when it has just quitted the care of the parent, is about $\frac{3}{20}$ths of an inch long, and differs from the adult in having the antennæ much shorter, each articulus of the flagella being longer than broad,—in the carpi of the gnathopoda not being produced along the inferior margins of the propoda (a rudimentary tubercle alone representing the position of the process),—and in the dactyla of the pereiopoda being proportionately larger and stronger.

2. **Eusirus Helvetiæ**, n. s. (Plate XXIX. fig. 1.) B.M.

Superior antennæ having the first joint of the peduncle much longer than the second; flagellum as long again as the peduncle, articuli nearly as long as broad, and furnished with cilia upon the inferior distal extremities; secondary appendage inappreciable. Inferior antennæ nearly as long as the superior; peduncle reaching but a little way beyond the peduncle of the superior. First pair of gnathopoda having the carpus extending nearly to the inferior angle of the palm; propodos imperfectly lozenge-shaped; palm oblique, slightly convex, fringed with a row of solitary cilia.

The remaining portion of the animal from which this description is taken is imperfect.

The length of the animal can only be approximately guessed at as about $\frac{1}{4}$ of an inch, but the fragment appears to be that of a mature animal.

Hab. Banff (*Mr. Edward*).

46. LEUCOTHOË.

Leucothoë, *Leach, Edinb. Encyc.* vii. p. 403; *Trans. Linn. Soc.* xi. p. 358 (not of *Kröyer* or *Dana*).
Edwards, Hist. des Crust. iii. p. 56; *Ann. des Sc. Nat.* xx. p. 380.
Desmarest, Consid. sur les Crustacés, p. 263.
White, Hist. Brit. Crust. p. 188; *Cat. Crust. in B. M.* 1847; *Cat. Brit. Crust. in B. M.* 1850.
Lycesta, *Savigny, Mém. sur les Animaux sans Vertèbres*, fasc. i. p. 109. pl. 4. f. 2; *Egypt. Crust.* pl. 11. f. 2.

Body long, compressed. Antennæ simple, subequal. Maxillipeds subpediform, unguiculate. Mandibles having an appendage. Four anterior pairs of coxæ as deep as their respective segments. First pair of gnathopoda having the carpus inferiorly produced to the extremity of the propodos; propodos slender; dactylos short: second pair having the carpus inferiorly produced to half the length of the propodos; propodos ovate; dactylos long. Perciopoda subequal, slender. Posterior pair of pleopoda having two long lanceolate rami. Telson single, squamiform.

1. Leucothoë articulosa. (Plate XXIX. fig. 2.)

Leucothoë articulosa, *Leach, Edinb. Encyc.* vii. p. 403; *Linn. Trans.* xi. p. 358.
Desmarest, Consid. p. 263. pl. 45. f. 5.
Edwards, Hist. des Crust. p. 58.
Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl. 1855.
White, Hist. Brit. Crust. p. 188; *Cat. of Crust. in B. M.* 1847; *Cat. Brit. Crust. in B. M.* 1850.
Spence Bate, Brit. Assoc. Report, 1855; *Ann. Nat. Hist.* Feb. 1857.
Cancer (Gammarus) articulosus, *Montagu, Linn. Trans.* vii. p. 70. pl. 6. f. 6.
Gammarus spinicarpus, *Müller, Zool. Dan.* iii. p. 66. pl. 119. f. 1–4.

Cephalon produced into a small down-curved rostrum. Eyes long-ovate, red. Superior antennæ one-fourth as long as the body; peduncle nearly as long again as the flagellum. Inferior antennæ somewhat shorter and more slender than the superior; peduncle longer than the peduncle of the superior; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda as long as the second: second pair of gnathopoda having the propodos ovate; palm receding, convex, entire. Perciopoda simple. Penultimate pair of pleopoda shorter than the antepenultimate; ultimate pair not reaching beyond the antepenultimate. Telson long, narrow, convex above, lanceolate. Colour flesh tint.
Length $\frac{3}{4}$ of an inch.

Hab. Coast of Devon (*Montagu*); Plymouth Sound and Oxwich Bay (*C. S. B.*); Polperro (*Mr. Loughrin*); Moray Frith (*Rev. G. Gordon*); Kullaberg, Scania (*Liljeborg*).

2. Leucothoë furina. (Plate XXIX. fig. 3.) B.M.

Lycesta furina, *Savigny, Mém. sur les Anim. sans Vert.* i. p. 109. pl. 4. f. 2; *Egypt. Crust.* pl. 11. f. 2.

Leucothoë furina, *Edw. Hist. des Crust.* iii. p. 57; *Ann. des Sc. Nat.* xx. p. 381.

Guérin-Méneville, Iconogr. Crust. pl. 26. f. 6 (after *Savigny*).

White, Hist. Brit. Crust. p. 189.

Spence Bate, Ann. Nat. Hist. ser. 2. vol. xx. p. 255.

Leucothoë procera, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Eyes round. First pair of gnathopoda smaller than the second; second pair having the propodos with the palm notched near the distal extremity. Posterior pair of pleopoda not reaching beyond the extremity of the preceding. Telson broad at the base, narrowing towards the middle, then continuous in the form of a prolonged apex. In all other characters the animal bears a close resemblance to *L. articulosa*.

Length $\frac{3}{4}$ of an inch.

Hab. Banff (*Mr. Edward*); Egypt (*Savigny*).

3. Leucothoë grandimanus. (Plate XXIX. fig. 4.)

Leucothoë grandimanus, *Stimpson, Marine Invert. of Grand Manan*, p. 51.

"Large, robust, thick. Coxæ very small. Cephalon depressed below the first segment of the pereion, subquadrate, with a slight rostrum in front, between the superior antennæ. Eyes large, on the sides of the cephalon. Mandibles with a minute triarticulate appendage. Maxillipeds slender, freely projecting. Superior antennæ with the peduncle very thick and elongated; flagellum short: inferior pair arising some distance below, and much more slender than, but about as long as the superior, which are about one-fourth the length of the body. In the first pair of gnathopoda the meros is very minute; the carpus subquadrate, compressed, with its inferior apex produced into a slender process, of equal length with the propodos, which is very much elongated, slender, and bears a slightly curved dactylos, which overlaps the produced extremity of the carpus for nearly half its length. In the second pair of gnathopoda the carpus projects over about half the inferior margin of the propodos, which is thick, ovate, and of great size, equalling in length more than the first three segments of the pereion; dactylos strong and curved. The pereiopoda are rather long, but very slender, with short dactyla. Three posterior pairs of pleopoda long, slender, nearly smooth, and pointed. Colour in life pale yellowish.

"Length ·044 of an inch.

"*Hab.* Dredged in 30 fathoms, on a shelly bottom, off Low Duck Island."—*Stimpson*.

This species closely resembles *L. articulosa*. The only differences seem to be the small coxæ, the length of the dactylos of the first pair of gnathopoda, and the colour of the American species.

4. Leucothoë denticulata.

Leucothoë denticulata, *Costa, Rend. della Reale Accademia delle Scienze di Napoli*, 1853, p. 177.

"Superior antennæ five times as long as the inferior. First pair of gnathopoda having the carpus slender, the digitiform process equalling in length that of the propodos; dactylos slender, half the length of the propodos. Second pair of gnathopoda having the propodos broad; palm oblique, armed anteriorly with five denticulations; dactylos strongly arcuate.

"Length 4 lines.

"*Hab.* Coast of Naples."—*Costa*.

5. Leucothoë Parthenopæa.

Leucothoë Parthenopæa, *A. Costa, Cat. dei Crost. Ital.* p. 24, 1851.

The Rev. Mr. Hope, in his Catalogue, gives the name only of this species: found at Naples.

47. PARDALISCA.

Pardalisca, *Kröyer, Tidskr.* iv. p. 153, 1842.

"Cephalon rather stout, subtumid. Coxæ of small dimensions. Antennæ slender; superior pair furnished with a secondary appendage; peduncle of the inferior pair as long again as the peduncle of the superior. Gnathopoda uniform, having the carpi largely developed and produced, so as to antagonize with the dactyla; propoda scarcely broader than the dactyla; dactyla ovate, and armed with many marginal spines* (like first pair of gnathopoda in *Leucothoë*?, S. B.). First two pairs of pereiopoda having sublaminar dactyla, posteriorly armed with strong† spines. Three posterior pairs of pereiopoda long, feeble; basa narrow. Three anterior pairs of pleopoda formed for swimming; three posterior pairs for leaping" (styliform?).—*Kröyer*.

* "Pedes primi secundique paris ea sunt conformatione, ut quartus eorum articulus manum efficere videatur, quintus sextusque juncti unguem quodammodo præstent; ita tamen, ut sextus formam monstret ovalem, multisque armatus sit aculeis marginalibus."—*Kröyer, l. c.*

† "Postice subtiliter serratulo."—*Kröyer, l. c.*

1. Pardalisca cuspidata.

Pardalisca cuspidata, *Kröyer, Tidskr.* iv. p. 153.

"Posterior pair of pleopoda large, exceeding the others in length. Third segment of the pleon having on the posterior margin on each side depressed teeth. Telson consisting of two long-ovate laminæ, posteriorly bispinose."

Length 7 lines.

Hab. Sea on the eastern side of Greenland (at Godthaab).—*Holböll.*

48. SEBA.

Seba, *A. Costa, Pochi Crost. di Messina.*

Slender, smooth. Antennæ long, subequal. Coxæ small, four anterior deeper than the three posterior. Gnathopoda uniform, subequal, chelate.

1. Seba innominata. (Plate XXIX. fig. 5.)

Seba innominata, *A. Costa, Pochi Crost. di Messina.*

Segments of the pereion subequal. First three segments of the pleon having the posterior lateral margins lobed near the middle, and excavate just above the postero-inferior angle. Eyes small. Superior antennæ nearly half as long as the animal; flagellum a little longer than the peduncle. Inferior antennæ not quite so long as the superior; peduncle as long as the peduncle of the superior. First pair of gnathopoda of the same form as, but a little smaller than the second, having the carpus as broad as the propodos; propodos as long again as the carpus, and having the infero-anterior angle produced, equal in length to the dactylos. Perciopoda subequal.

Hab. Coast of Naples (*Hope*).

The above descriptions of both the genus and species, as well as the figure, are taken from a figure given in a memoir in the possession of Prof. M.-Edwards; but I have some doubt of the correctness of my notes, both as to the title of the work, and the specific name.

49. GOSSEA, n. g.

Slender, compressed. Superior antennæ without a secondary appendage, and having the joints of the peduncle short and subequal. Gnathopoda subchelate; first pair larger than the second. Posterior pair of pleopoda biramous; rami longer than the peduncle and extending considerably beyond the telson. Telson single, squamiform.

The animals of this genus are very likely, upon a superficial examination, to be confounded with those of *Microdentopus*; but the

differences in the superior antennæ, posterior pair of pleopoda, and telson are considerable and important. The genus is named in compliment to Mr. Gosse, in consideration of his valuable contributions to marine zoology.

1. **Gossea microdentopa**, n. s. (Plate XXIX. fig. 6.) B.M.

Eyes rather large, rounded, black. Superior antennæ about one-third the length of the animal; peduncle having the joints gradually decreasing in length, the last carrying two short trumpet-mouth-shaped auditory cilia; flagellum rather longer than the peduncle, every second articulus being inferiorly distally produced and crowned with a few cilia. Inferior antennæ (wanting in the only specimen examined). First pair of gnathopoda subchelate; propodos long, quadrate; palm slightly convex: second pair smaller and narrower than the first. Pereiopoda subequal. Pleopoda long, slender, styliform, and with a few short spines on the upper side. Telson lanceolate.

Length $\frac{3}{20}$ths of an inch.

Hab. Ilfracombe (*Mr. Gosse*).

50. AORA.

Aora, *Kröyer*, *Tidskr.* ser. 2. i. p. 335, 1845.
Lalaria, *Nicolet*, *Gay's Historia de Chile*, iii. 1849.
Spence Bate, *Ann. Nat. Hist.* xx. p. 525, 1858.
Lonchomerus, *Spence Bate*, *Brit. Assoc. Report*, 1855; *Ann. Nat. Hist.* Feb. 1857.
White, *Hist. Brit. Crust.* p. 180.

Superior antennæ longer than the inferior, and carrying a secondary appendage. Inferior antennæ having the peduncle much longer than the flagellum. First pair of gnathopoda much longer than the second, and having the meros produced inferiorly into a long tooth. Third pair of pereiopoda shorter than the first two, fourth much longer than the third, fifth much longer than the fourth. Posterior pair of pleopoda biramous. Telson tubular.

At first I was inclined to incorporate this genus with *Microdentopus*; but the species found by M. Gay on the shores of Chili shows that there is more than one that assimilates in the peculiar characters of the genus.

1. **Aora gracilis.** (Plate XXIX. fig. 7.) B.M.

Lonchomerus gracilis, *Spence Bate*, *Report Brit. Assoc.* 1855; *Ann. Nat. Hist.* Feb. 1857.
White, *Hist. Brit. Crust.* p. 180.

Body long, slender. Eyes small, black. Superior antennæ nearly as long as the animal, the flagellum being twice as long as the

peduncle; secondary appendage nearly half as long as the peduncle, consisting of two long articuli; third joint of the peduncle not so long as the first, and the first not so long as the second. Peduncle of the inferior antennæ longer than the peduncle of the superior, last two joints subequal, and more than as long again as the preceding; flagellum four- or five-articulated, not longer than about half the length of the last joint of the peduncle. Coxa of the first pair of gnathopoda produced anteriorly to a point; basos very long, nearly as long as the second pair of gnathopoda; meros inferiorly and anteriorly produced, as long as the carpus; carpus longer than the propodos; propodos long-ovate; dactylos nearly as long as the propodos, internal margin serrated. Second pair of gnathopoda not longer than the first two pairs of pereiopoda; carpus as broad as the propodos; propodos having the margins parallel, palm oblique, imperfectly defined. Third pair of pereiopoda very short, shorter than the preceding pair; basos oval. Fourth pair considerably longer than the third, furnished with long cilia; basos oval, with the postero-inferior angle produced. Pleopoda subequal. Telson with one or two plumose cilia. Colour claret-red, with black spots, chiefly on the coxæ, legs, and dorsal and marginal surfaces of each segment of the body.

Length $\frac{4}{20}$ths of an inch.

Hab. Plymouth Sound, trawled off the Eddystone, and Oxwich Bay, Glamorgan (*C. S. B.*). Polperro (*Mr. Loughrin*). Loch Fyne and St. Ives (*Mr. G. Barlee*).

I have taken, from trawl-refuse, a specimen that differs from the one described in having the first pair of gnathopoda shorter and much more robust; also a second specimen, the colour of which is yellow, spotted with black, and the internal margin of the dactylos on the first pair of gnathopoda entire. These being the only differences between them and the form I have described, I doubt whether the distinctions are more than those of sex, or variety dependent upon local circumstances.

2. **Aora typica.** (Plate XXIX. fig. 8.)

Aora typica, *Kröyer, Tidskr.* ser. 2. i. p. 328. pl. 3. f. 3.
Lalaria longitarsis, *Nicolet, Gay's Hist. de Chile,* iii. pl. 2. f. 8.

Eyes small, round. Superior antennæ two-thirds the length of the animal; inferior one-fourth shorter than the superior. First pair of gnathopoda having a large tooth directed forwards near the superior extremity of the anterior margin of the basos; meros inferiorly produced, as long as the carpus; carpus rather longer than the propodos; propodos slightly arcuate, palm none, inferior

margin imperfectly toothed and slightly concave; dactylos half the length of the propodos, internal margin entire.

Hab. Valparaiso.

In other respects the animal, as represented by Nicolet, bears a very close resemblance to *A. gracilis*.

51. **STIMPSONIA**, n. g.

Slender: the inferior pair of antennæ considerably longer than the superior. First pair of gnathopoda larger than the second; carpus broader and longer than the propodos: second pair imperfectly chelate, having the carpus much longer than the propodos. Posterior pereiopoda long. Posterior pleopoda biramous. Telson tubular.

The name given to this genus is in compliment to the industrious and intelligent naturalist of the United States Exploring Expedition to the North Pacific.

1. **Stimpsonia chelifera**, n. s. (Plate XXIX. fig. 9.) B.M.

Eyes small, round, black. Superior antennæ having the first joint of the peduncle scarcely as long as the cephalon, second joint quite as long, third but half the length of the second; flagellum reaching to the third or fourth articulus of the flagellum of the inferior pair; secondary appendage uniarticulate. Inferior antennæ two-thirds the length of the entire animal; third joint of the peduncle dilated, nearly as broad as long, the fourth reaching beyond the extremity of the second of the superior, fifth considerably longer than the fourth; flagellum nearly as long as the fourth joint of the peduncle. First pair of gnathopoda having the carpus and propodos associated; carpus longer and broader than the propodos, and from the centre of the inferior margin a long, slender, curved, sharp tooth is produced anteriorly to nearly the extremity of the propodos; propodos arcuate, scarcely more than one-third as broad as long, inferior margin parallel with the superior, palm rudimentary; dactylos long, curved, and serrated upon the inner margin, antagonizing with the long tooth upon the carpus. Second pair of gnathopoda having the carpus much longer than the propodos, not inferiorly produced; propodos as broad as long, the palm deeply waved; infero-anterior angle produced into a long, stout, slightly posteriorly curved blunt tooth, against which the long dactylos impinges, and with it forms an imperfect claw. The rest of the animal closely resembles *Aora gracilis*. Colour of the animal generally dark grey, of the antennæ red.

Length $\frac{7}{20}$ths of an inch.

Hab. Salcombe (*Mr. Webster*).

52. MICRODENTOPUS.

Microdentopus, *Costa, Rend. della Reale Accad. delle Sci. di Napoli*, 1853, p. 171.

Lembos, *Spence Bate, Brit. Assoc. Report*, 1855; *Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 180.

Gammarus, Division ++, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1854, p. 455.

Body long and slender. Superior pair of antennæ longer than the inferior, and carrying a secondary appendage. Mandibles furnished with an appendage. Gnathopoda subchelate; first pair larger than the second. Third pair of pereiopoda not longer than the two preceding; fourth pair much, and fifth pair very much longer than the others. Posterior pair of pleopoda biramous. Telson tubular, conical, and tipped with a double vertical apex.

The form of the telson is peculiar, so far as I know, to this genus. It appears like a distinct segment of the body with rudimentary pleopoda. The double apex may have the capability of impinging one part against the other, but I am not aware that either is moveable. If future research should prove them to be so, the animals of this genus will probably be found to possess the power of building nests or tubes, and therefore should be grouped amongst the Domicola.

1. Microdentopus Gryllotalpa. (Plate XXX. fig. 1.) B.M.

Microdentopus gryllotalpa, *Costa, Rend. della Reale Accad. delle Sci. di Napoli*, 1853, p. 178.

Lembos Danmoniensis, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 180.

Male.—Body slender. Three segments of the pleon having the infero-posterior angle rounded. Eyes round, small, white, with black spots. Superior antennæ half the length of the animal; peduncle scarcely half the length of the whole organ; secondary appendage uniarticulate. Inferior antennæ nearly as long as the superior; peduncle extending beyond the peduncle of the superior, last two joints subequal, flagellum not longer than the last joint of the peduncle. First pair of gnathopoda large and powerful; carpus longer and broader than the propodos, infero-anteriorly armed with a strong, sharp, and slightly curved tooth; propodos broad-ovate, palm rounded, not defined; dactylos interiorly serrated, the apex impinging against the extremity of the carpal tooth. Second pair of gnathopoda having no tooth to the carpus; carpus as long as the propodos; propodos square-ovate, palm not oblique, imperfectly defined; dactylos serrated internally. Pereiopoda having the basa of the last three pairs long-ovate, not much dilated. Posterior pair of pleopoda short, not reaching be-

yond the preceding, and scarcely beyond the telson. Telson long, conical, tipped with rudimentary rami (?).

Length $\frac{4}{20}$ths of an inch.

Hab. In a sponge, under the Hoe, Plymouth (*Mr. Howard Stewart*); Polperro (*Mr. Loughrin*); Naples (*Costa*).

Some specimens, taken with this, have no tooth upon the carpus of the anterior pair of gnathopoda; these, I think, are females of the same species.

2. **Microdentopus Websterii.** (Plate XXX. fig. 2.) B.M.

Lembos Websterii, *Spence Bate, Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 180.

Male.—Superior pair of antennæ having the secondary appendage two- or three-articulated. First pair of gnathopoda having the carpus as long as the propodos, and both fringed with long hairs upon the superior and inferior margins; propodos ovate, palm short, scarcely oblique, the inferior angle developed into a long obtuse tooth; dactylos having the internal margin smooth. Second pair of gnathopoda having the carpus longer than the propodos, both furnished with long hairs upon the superior and inferior margins; propodos ovate, tapering, palm oblique, scarcely defined; dactylos having the internal margin serrated. The rest of the description approximates to that of *M. Gryllotalpa*. The colour of this species is grey, deepening almost to black in the anterior and dorsal region of the pereion and cephalon. When dried, the surface exhibits prismatic hues.

Length $\frac{5}{20}$ths of an inch.

Hab. Falmouth (*Mr. Webster*); Skye and Shetland (*Mr. Barlee*). I have named this species after its discoverer, who has kindly sent me the results of his dredging from several localities.

3. **Microdentopus anomalus.** (Plate XXX. fig. 3.) B.M.

Gammarus anomalus, *Rathke, Acta Leop.* p. 63. tab. 4. f. 7, 1843.
Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl. 1854, p. 457.
Lembos Cambriensis, *Spence Bate, Brit. Assoc. Report*, 1855; *Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 180.

Female.—The three anterior segments of the pleon having the infero-posterior angle produced to a point. Eyes black, long-oval. Peduncle of the superior pair of antennæ reaching to the extremity of the peduncle of the inferior; secondary appendage four-articulated. First pair of gnathopoda having the carpus shorter than the propodos; propodos ovate, palm convex, not defined, fringed with a

few cilia; dactylos serrated upon the internal margin. Second pair of gnathopoda, with the exception of being smaller, resembling the first pair in form. The rest of the animal bears a close affinity to *M. Gryllotalpa*, except in colour, which in this species is corneous, very transparent, having a few pink markings, and generally sparsely covered, except along the dorsal surface, with black spots. Length $\frac{5}{20}$ths of an inch.

Hab. Oxwich Bay, S. Wales (*C. S. B.*); Coast of Norway (*Rathke* and *Liljeborg*); amongst Nullipore, Cumbrae, N. B. (*Robertson*).

This species may be the female of one of the preceding; but it differs considerably in the form of the posterior margin of the anterior segments of the pleon, as well as in colour. It was the only species I took on the coast of Wales, and must occupy for the present, I think, a position distinct from the others.

4. Microdentopus tenuis. (Pl. XXX. fig. 4.)

Gammarus tenuis, *Dana, U. S. Explor. Exped.* p. 950. pl. 65. f. 5.

"Slender; coxæ narrow. Front margin of either side of head a little prominent. Eyes round, small. Superior antennæ somewhat shorter than the body, very slender, terete; first joint of peduncle longer than the third, second twice as long; flagellum slightly longer than the base, fourteen-articulated, setæ longer than the articuli; secondary appendage very short. Inferior antennæ much shorter than the superior, setæ longer, base much longer than base of superior; last two joints long and subequal, the preceding very short; flagellum five-articulated, not longer than last basal joint. First pair of gnathopoda of medium size; propodos oblong, somewhat larger towards apex and obliquely truncate, margins setose in tufts, an angle at the lower limit of truncation, palm not excavate; dactylos about half as long as propodos. Second pair much smaller than first. Last three pairs of pereiopoda very unequal in length; seventh very much longer than sixth pair.

"Length 3 lines.

"*Hab.* Sooloo Sea, in $6\frac{1}{2}$ fathoms water, collected February 2nd, 1842."—*Dana.*

This species closely resembles *M. anomalus* of the British coast.

5. Microdentopus versiculatus. (Plate XXX. fig. 5.)

Lembos versiculatus, *Spence Bate, Brit. Assoc. Report*, 1855; *Ann. Nat. Hist.* Feb. 1857.

White, Hist. Brit. Crust. p. 180.

Eyes small, round. Secondary appendage to the superior pair of antennæ uniarticulate. First pair of gnathopoda having the

carpus as long and broad as the propodos, both fringed along the inferior margin with long hairs; propodos ovate, palm not defined; dactylos not serrated on the inner margin. Second pair of gnathopoda having the carpus as long as, and stouter than the propodos, furnished anteriorly with a very considerable brush of long hairs; propodos long, cylindrical, slightly tapering at the point, fringed with a few hairs, palm not defined; dactylos curved, short. The rest of the animal differs but slightly from the preceding species. The colour is corneous, generally passing into a grey along the dorsal surface of the pereion.

Length $\frac{3}{20}$ths of an inch.

Hab. Plymouth (*Mr. H. Stewart* and *C. S. B.*).

6. Microdentopus longipes.

Gammarus longipes, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1852, p. 10; 1854, p. 457.

"Very much like *M. anomalus*. Eyes small, round, black. Superior antennæ much longer than the inferior; flagellum consisting of about sixteen articuli, the secondary appendage of three or four; flagellum of the inferior antennæ consisting of about six articuli. First pair of gnathopoda larger than the second, having the propodos in the male ovate, furnished on the posterior margin near the dactylos with two processes and an internal moveable spine; in the female nearly ovate, inferiorly oblique, truncate, and wanting the processes on the posterior margin within the moveable spine*. Second pair of gnathopoda having the propodos in the male ovate, with long hairs, thickly planted, chiefly anteriorly; in the female nearly rectangular, but not more than half as broad as the first pair. Third pair of pereiopoda shorter than the rest; fifth pair much the longest, reaching far beyond the extremity of the posterior pair of pleopoda; propodos longer than either of the other joints. Rami of the posterior pair of pleopoda equal, pointed, reaching nearly to the apex of the antepenultimate pair of pleopoda. Telson single, tubercular, short, truncate, having two conspicuous spines situated posteriorly above.

"Length about 7 millims.

"*Hab.* In the sea, at Kullaberg in Scania, taken from a depth of from 14 to 16 fathoms."—*Liljeborg.*

* "Manus pedum thor. 1^{mi} paris iisdem 2^{di} paris majores, apud marem ovatæ, ad marginem posticum, unguem propius, processibus duobus et aculeo interno mobili præditæ, apud feminam fere ovatæ, inferne oblique, truncatæ, et processibus carentes ad marginem posteriorem intus aculeo mobili."—*Liljeborg, l. c.*

7. Microdentopus macronyx.

Gammarus macronyx, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1854, p. 458.

"*Female.*—Resembling *M. longipes*, but less compressed, the antennæ and perciopoda shorter. Coxæ small. The back rather broad. Body slender. Eyes minute, round, black. Cephalon without a rostrum; back smooth; three posterior segments of the pleon without spines. Antennæ of moderate length: superior longer than the inferior; first joint of the peduncle much stouter than the rest, second but slightly shorter, and the third equalling about half the second: flagellum consisting of from 14–16 articuli, the secondary appendage consisting of five articuli. Inferior antennæ a little more robust than the superior; third and fourth [fourth and fifth?] joints of the peduncle about equal in length, and passing the extremity of the peduncle of the superior antennæ: flagellum consisting of seven articuli. Gnathopoda subequal, the first pair a little the larger, hispid, oblong-ovate, destitute of processes and spines. First and second pairs of perciopoda unequal; mera large, dilated, and produced at the antero-distal extremity; carpi short; propoda arcuate; dactyla also arcuate, and gradually tapering, terminating in a very long unguis. Third pair of perciopoda about the same length as the second; the sixth and seventh pairs, being directed backwards, extend beyond the extremity of the pleopoda. External ramus of the posterior pair of pleopoda longer than the internal, as long as the peduncle, and reaching to the extremity of the penultimate pair, both being conical and spinous. Telson short, thick, rounded posteriorly, and furnished above with two obtuse spiniferous tubercles separated by a little notch.

"Length 5½ millims.

"*Hab.* Taken in from 4 to 5 fathoms of water, at Kullaberg in Scania: rare. Inactive, and dies quickly when taken from the water."—*Liljeborg.*

53. PROTOMEDEIA.

Protomedeia, *Kröyer, Tidskr.* iv. p. 154.
Leptocheirus, *Zaddach, Syn. Crustaceorum Prussicorum Prodromus*, p. 7.
Ptilocheirus, *Stimpson, Marine Invert. of Grand Manan*, p. 55.

Slender, and slightly compressed laterally. Superior pair of antennæ as long as the inferior, having a secondary appendage. Coxæ but slightly deeper than their respective segments. First pair of gnathopoda subchelate, the second simple. Posterior pair of perciopoda subequal with the fourth. Posterior pair of pleopoda biramous. Telson double?

1. Protomedeia pilosa.

Leptocheirus pilosus, *Zaddach, Syn. Crust. Prass. Prodromus*, p. 8, 1844.

"Cephalon without a rostrum. Eyes round. Superior antennæ nearly half the length of the animal; first joint thick, second much longer and slighter; third short, resembling one of the articuli of the flagellum; flagellum consisting of twelve articuli. Inferior antennæ shorter than the superior; flagellum consisting of seven articuli. First pair of gnathopoda subchelate; basos long, anterior margin covered with very short hairs, posterior with a few long ones; ischium and meros having the inferior margin furnished with long hairs; carpus continuous with the propodos, inferior margin pilose; propodos tumid, the palm (*marginem anticum*) pilose and obliquely truncate; dactylos arcuate, as long as the palm. Second pair of gnathopoda compressed, slender; basos having the anterior margin furnished with dense rigid hairs equalling in length the entire organ; propodos shorter than the carpus; dactylos straight and feeble; the inferior margins of the propodos and dactylos having short, the superior margins having long and dense hairs. Posterior pair of pleopoda having the rami equal, styliform, furnished at the apex with short hairs. Telson submembranous, short, rounded above. Colour yellow, sparingly spotted with black along the back.

"Length 1·5 line.

"*Hab.* Baltic Sea, near Gedanum."—*Abbreviated from Zaddach.*

2. Protomedeia hirsutimanus, n. s. (Plate XXX. fig. 6.) B.M.

Eyes round. Antennæ subequal, not half as long as the entire animal. First pair of gnathopoda having the coxæ small; the ischium produced inferiorly, and tufted with a brush of long hairs; meros small, and thickly covered inferiorly with long hairs; carpus shorter than the propodos, furnished inferiorly with a thick brush of hairs; propodos not broader than the carpus, inferior margin parallel with the superior, the anterior extremity furnished with three tufts of long hairs, palm imperfectly defined, having the inferior half oblique; dactylos short, straight, furnished with two or three cilia. Second pair of gnathopoda having the coxa as large as those of the first two pairs of pereiopoda; basos having the anterior margin convex, fringed with two parallel rows of closely set, long, plumose hairs; carpus four times as long as the propodos, fringed upon the superior margin with a single row of less closely set long plumose hairs; propodos short, tapering, almost equilateral, having the superior margin and apex fringed with plumose hairs,

the inferior margin with three fasciculi of rather long simple hairs; dactylos nearly as long as the propodos, straight. First two pairs of pereiopoda having the dactylos very long, considerably longer than the propodos, unguiculate: third pair having the basos dilated posteriorly near the upper extremity, and narrowing downwards; dactylos short, not styliform, and terminating in two short spines or unguiculæ. The remainder of the animal from which this description is taken is imperfect.

Length —— ?

Hab. Banff (*Mr. Edward*).

3. **Protomedeia fimbriata.** (Plate XXXI. fig. 1.) B.M.

Gammarus fimbriatus, *Stimpson, MS.*

Eyes small, round, black. Superior antennæ not half as long as the entire animal. Inferior antennæ having the fourth joint of the peduncle reaching beyond the second of the superior. First pair of gnathopoda having the carpus as long as the propodos; propodos short, being only as long again as broad, inferior margin increasing towards the palm; palm slight, convex, inferior margin rounded, imperfectly defined by three or four short spines: four fasciculi of short hairs fringing the superior margin; in other respects the whole appendage is clean. Second pair of gnathopoda having the carpus but little longer than the propodos, fringed distally upon the superior margin with very long hairs, upon the inferior margin with several fasciculi of short hairs; propodos not so broad as the carpus, gradually tapering to a point, the superior margin fringed with long hairs, the inferior with several fasciculi of short hairs; dactylos more than half as long as the propodos. In other respects this animal closely resembles *P. pinguis*.

Length $\frac{9}{20}$ths of an inch.

Hab. Grand Manan.

I do not feel quite satisfied that this species is distinct from *P. pinguis*; at all events the separation is not so visible as Stimpson states it to be between the male and female of that species.

4. **Protomedeia Whitei**, n. s. (Plate XXXI. fig. 2.) B.M.

First three segments of the pleon having the infero-posterior angle produced into a tooth, and the inferior margin fringed with a few solitary cilia; the fourth segment having the posterior dorsal margin produced into a tooth. Eyes roundish. Superior antennæ having the first joint of the peduncle distally enlarged; second

joint slender; third short, slender; flagellum as long as the peduncle; secondary appendage consisting of one long and one short articulus. Inferior antennæ having the fourth joint of the peduncle reaching beyond the extremity of the peduncle of the superior. First pair of gnathopoda (imperfect): second pair having the carpus and propodos subequal in length, and fringed with a few not very long hairs; dactylos straight, about one-third the length of the propodos. First two pairs of pereiopoda long and slender, having the dactylos short, about one-third the length of the propodos; basa of the three posterior pairs of pereiopoda but slightly dilated posteriorly, and narrowing distally. Ante- and penultimate pairs of pleopoda furnished with a few spines along the upper margin. Telson double, each portion having a subapical emargination, from the bottom of which springs a solitary cilium. Under the microscope the integument is covered with small opaque spots.

Length $\frac{4}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*).

This species is named in compliment to Mr. Adam White, of the British Museum, author of a popular 'History of the British Crustacea.'

5. **Protomedeia pinguis**, n. s. (Plate XXXI. fig. 3.) B.M.

Ptilocheirus pinguis, *Stimpson, Marine Invert. of Grand Manan*, p. 56.

Male.—Eyes small, oblong, narrow, black. Superior antennæ half as long as the animal, having the peduncle as long as the flagellum; secondary appendage one-third as long as the flagellum. Inferior antennæ nearly as long as the superior, having the peduncle longer than the peduncle of the superior. First pair of gnathopoda having the carpus as long as the propodos; propodos gradually but slightly enlarging to the palm, which is straight, and defined at the inferior angle by a short stout spine; dactylos short, stout, curved: a row of long, closely set hairs fringe the inferior margin of the ischium, of the meros, as well as that of the carpus; a few short, stiff, curved hairs, regularly increasing in length, also fringe the inferior margin towards the anterior extremity of the propodos. Second pair of gnathopoda slender; carpus very long, more than as long again as the propodos, carrying a brush of long plumose hairs upon the anterior extremity of the superior margin; propodos scarcely as broad as the carpus; superior margin straight, fringed with a row of long plumose hairs, the inferior margin gradually tapering and fringed with fasciculi of short hairs. First two pairs of pereiopoda uniform,

having a long slender styliform dactylos; three posterior pairs of pereiopoda having the basos well expanded. "Three posterior pairs of pleopoda very spiny above, those of the last pair short."

"*Female*.—Superior antennæ longer than the inferior ones. Cephalon equalling in length that of the first two segments together, which equal each other. Coxæ of the first pair of gnathopoda very small, subtriangular; those of the second pair without a groove, and not projecting beyond the others, though still the larger. This results from the smaller size of the first pair of gnathopoda, which are much more slender, and those of the second pair proportionally more elongated, than in the male.

"The colour is dark greyish on all the segments, coxæ, and basa, except at their margins. Antennæ and legs white.

"Length of a large male 0·64 inch.

"*Hab.* This species is abundant on the whole coast of New England, as well as Grand Manan. It is most abundant on sandy bottoms in the laminarian zone; although sometimes occurring at low-water mark, as at Fisher's Cove; or in the coralline zone, as in twenty-five fathoms, off Duck Island."—*Stimpson*.

I am indebted to the discoverer of this species for a specimen, from which I have drawn the above description of the male, and the figure in the plate; the deficiency I have filled up from the author's original description of the female in the work referred to.

6. Protomedeia Nordmannii.

Acanthonotus Nordmannii, *Edwards, Hist. des Crust.* iii. p. 24.

"Cephalon not rostrated, but forming, above the base of the inferior antennæ, a large protuberance which bears the eyes, and which carries at its extremity the superior antennæ. Antennæ slender and long; the peduncle of the superior pair very short and the flagellum long, exceeding in length but a little the peduncle of the inferior pair. Pereion and pleon round, without teeth or spines below. Coxæ of the gnathopoda and first two pairs of pereiopoda extremely large. First pair of gnathopoda subchelate, having the propodos enlarged below near its *base*; dactylos tolerably long. Second pair of gnathopoda filiform, and without trace of a prehensile termination. First and second pairs of pereiopoda having the meros very large and broad, the carpus and propodos very small, and the dactylos very long, slender and styliform; three posterior pairs short, but having the basos very large and nearly as broad as long. Posterior pair of pleopoda much longer than those of the two preceding pairs, terminating in two lanceolate

rami of equal length. Telson consisting of two sublanceolate lamellæ, of which the internal margins are straight.

"Length about 5 lines."—*Edwards.*

Hab. Coasts of the Crimea (*Nordmann*).

This species was named by Milne-Edwards after the naturalist who sent it to him.

7. Protomedeia fasciata.

Protomedeia fasciata, *Kröyer, Tidskr.* iv. p. 154.

"Having about ten black transverse bands."

"Length 4 lines.

"*Hab.* Godthaab, on the southern coast of Greenland."—*Kröyer.*

54. BATHYPOREIA.

Bathyporeia, *Lindström, Comm. Acad. Holm.* 1855, p. 59; *Nat. Hist. Review*, Jan. 1857, p. 43.
White, Hist. Brit. Crust. p. 187.
Thersites, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Superior antennæ short, furnished with a secondary appendage, having the first joint of the peduncle large and tumid, produced superiorly upon the distal extremity; second joint smaller, articulating infero-subapically with the first. Inferior antennæ much longer than the superior, having the peduncle slender, and longer than the peduncle of the superior. Mandibles having an appendage. First pair of gnathopoda subchelate; second pair having the dactylos absent. Posterior pair of pleopoda terminating in two branches, one rudimentary, the other long and biarticulate. Telson double.

1. Bathyporeia pilosa. (Plate XXXI. fig. 4.) B.M.

Bathyporeia pilosa, *Lindström, Comm. Acad. Holm.* 1855, p. 59; *Nat. Hist. Review*, Jan. 1857, p. 43. pl. fig. C.
White, Hist. Brit. Crust. p. 188.
Thersites Guilliamsoniana, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Superior antennæ not longer than the peduncle of the inferior, having the first joint of the peduncle broadly ovate, second joint very small, third not half the breadth of the second; flagellum not longer than the peduncle, first articulus longer than the last joint of the peduncle, the rest irregularly long and short; secondary appendage consisting of one long and one short articulus. Inferior antennæ having the peduncle as long as the superior antennæ; flagellum scarcely

as long as the peduncle, first articulus as long as the last joint of the peduncle, the rest irregularly long and short. "First pair of gnathopoda small, having the carpus longer than the propodos; propodos ovate, palm imperfectly defined*." Second pair of gnathopoda having the carpus longer than the propodos; propodos fringed along the palm, or infero-anterior margin, with a brush of long hairs; a similar brush fringes to a less extent the inferior margins of the meros and carpus. First pair of pereiopoda having the meros broad; carpus about half the length and breadth of the meros; propodos long and narrow; dactylos slightly arcuate. Second pair resembling the first. Third pair having the basos narrowest near the coxa, and dilated posteriorly towards the distal extremity; the meros distally enlarged, and the carpus postero-distally produced. Fourth pair having the basos nearly disc-shape. The fifth like the fourth, but longer. Posterior pair of pleopoda longer than the preceding; terminal joint of the longer rami one-third the length of the first, and tipped with a long spine-like hair. Telson having one side of each division straight, the other arcuate, subapically tipped with a fasciculus of hairs.

Length $\frac{2}{20}$ths of an inch.

Hab. Weymouth (*Prof. Williamson*); Tenby (*Mr. Webster*); Wisby, on a sandy bottom at from 18 to 24 fathoms, and Lauskrona (*Lindström*).

2. **Bathyporeia Robertsoni**, n. s. (Plate XXXI. fig. 5.) B.M.

Male.—Eyes round. Superior antennæ longer than the peduncle of the lower; flagellum longer than the peduncle, articuli regular in size, scarcely longer than broad, each carrying distally, short cilia and a single auditory cilium of oval form; secondary appendage consisting of a single articulus as long as the first four of the flagellum. Inferior antennæ about half as long as the animal; flagellum about three times as long as the peduncle, articuli gradually increasing in length, each carrying a small oval calceola at the superior distal extremity. First pair of gnathopoda (not made out). The rest of the animal appears to differ in no material degree from *B. pilosa*.

Length about $\frac{1}{4}$ of an inch.

Hab. Cumbrae, near Glasgow, in the month of February, in sand-pools near low-water mark; numerous, darting hither and thither (*Robertson*). It is named in compliment to the discoverer.

* For this I am indebted to Lindström's figure, the first pair of gnathopoda in my specimen being wanting.

3. **Bathyporeia pelagica.** (Plate XXXI. fig. 6.) B.M.

Thersites pelagica, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Superior antennæ as long as the peduncle of the inferior; flagellum as long as the peduncle, articuli small, regular; at the base of the flagellum they are broader than long, but at the distal extremity they are much longer than broad. Inferior antennæ long and slender, longer than the animal. First pair of gnathopoda (not made out). The rest not materially differing from the two preceding species.

Length $\frac{1}{4}$ of an inch.

Hab. Moray Frith (*Rev. G. Gordon*).

55. NIPHARGUS.

Niphargus, *Schiödte, Act. Soc. Reg. Dan.* 1851, p. 26; *Nat. Hist. Review*, i. p. 43, 1857.
White, Hist. Brit. Crust. p. 186.

Eyes minute. Superior antennæ longer than the inferior, having a secondary appendage. Inferior antennæ having the peduncle longer than the flagellum. Mandibles with an appendage. Gnathopoda subequal, subchelate; carpi narrow; propoda broad. Posterior pair of pleopoda much longer than the preceding, biramous, unequal, the inner branch uniarticulate and very short, the outer biarticulate and very long. Telson single, divided.

1. **Niphargus Stygius.** (Plate XXXII. fig. 1.) B.M.

Niphargus stygius, *Schiödte, Act. Soc. Reg. Dan. Trans.* 1855; *Nat. Hist. Review*, i. p. 43, 1857.
Westwood, Proc. Linn. Soc. Apr. 1853.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.
Niphargus aquilex, *Schiödte, Act. Soc. Reg. Dan. Proc.* 1855; *Nat. Hist. Review*, i. p. 43, 1857.
White, Hist. Brit. Crust. p. 187.
Gammarus puteanus, *Koch, Deutschl. Crust. Myr. u. Arach.* h. 36. n. 22.
De Vallette St. George, De Gammaro puteano, pl. 1. f. 5.

Pleon having the postero-inferior angle of the three anterior segments rounded, and fringed with three or four short equidistant hairs. Superior antennæ three-fourths as long as the animal. Inferior antennæ half the length of the superior. Coxæ not so deep as their respective segments. Gnathopoda uniform; the propodos on each pair subtriangular, being of three nearly equal sides, the sides slightly convex; palm fringed with a few short equidistant cilia, and defined by a strong spine. Pereiopoda subequal, slender, and furnished with short fine hairs on the

posterior margin, and a few short spine-like hairs on the anterior or flexible margin. In other respects the animal appears to resemble *N. puteanus*.

Length ½ an inch.

Hab. Draw-wells about Zweibrücken (*Koch*); Grottos of Adelsberg and Lueg in Carniola (*Schiödte*). In water for domestic purposes, Leyden, and from a pump, Maidenhead, England (*Westwood*).

Schiödte, in his description of *N. aquilex*, affirms the dorsal surface to possess a carina; but, after a careful examination of the examples deposited by Mr. Westwood in the British Museum, I came to the conclusion that this is an error on the part of the describer, the result probably of examining dried and shrivelled specimens.

I am indebted to Mr. Westwood for a tracing of a figure from the work of Chevalier Vallette St. George above quoted, and for an examination of the specimen from Leyden, which is preserved in the Hope Collection at Oxford, whereby I have been enabled to identify them with the present species. Koch colours his figure of this species of a very pale greenish-grey. Mr. White, in his 'History of British Crustacea,' describes it as snow-white.

2. **Niphargus fontanus.** (Plate XXXII. fig. 2.) B.M.

Niphargus fontanus, *Spence Bate, Proc. Dublin Univ. Zool. and Bot. Assoc.* 1859; *Nat. Hist. Review*, vi. p. 165. f. 2.

Hogan, Proc. Dublin Univ. Zool. and Bot. Assoc. 1859; *Nat. Hist. Review*, vi. p. 166.

Female.—Cephalon having the ophthalmic lobe anteriorly produced. Pleon having the three anterior segments furnished at the antero-inferior angle with three separate spines or hairs, and having the postero-inferior angle produced to a point, which is either apically or subapically tipped with a short spine or hair: each of the four posterior segments carrying one or two hairs upon the posterior dorsal margin. Eyes minute, imperfectly formed, bright lemon colour. Superior antennæ not half the length of the animal; flagellum scarcely longer than the peduncle, each articulus distally furnished with a few short hairs and a short auditory cilium. Inferior antennæ having the peduncle scarcely longer than the peduncle of the superior; flagellum not longer than the last segment of the peduncle. Maxilliped with small squamous plates, arising from the coxa and basos only. Four anterior coxæ fringed along the inferior margin with four or five equidistant hairs. First pair of gnathopoda like the second, but smaller, and having the palm defined by two spines. Second pair having the carpus excavated infero-anteriorly to receive the posterior portion of the propodos; the propodos subtriangular, the upper or anterior margin straight, postero-inferior margin convex, posteriorly produced, and

furnished with four fasciculi of hairs; palm waved, very oblique, furnished with a submarginate row of short, and a few long equidistant hairs, and defined by strong, sharp, moveable spines; dactylos arcuate, unguiculate, having a small tooth where it suddenly narrows to the unguis. Pereiopoda slender, subequal, furnished with fasciculi of short spines. Antepenultimate pair of pleopoda not reaching beyond the penultimate; posterior pair very long, the second joint being nearly as long as the first; inner rami almost rudimentary. Telson as long as the peduncle of the posterior pair of pleopoda.

Male.—Second pair of gnathopoda having the propodos less tapering and graceful than in the female, and the posterior pair of pleopoda with the second joint very short.

Length $\frac{1}{2}$ an inch.

Hab. In a pump-well, sunk about fourteen years since, a few feet distant from an old well, at Ringwood, Hants (*Rev. A. R. Hogan*). In a pump-well about two hundred years old, at Corsham (*Mr. Herbert Mullins*).

I have followed the authority of Schiödte for the fact that the males in this genus differ from the females in the length of the posterior pair of pleopoda; but it is singular, in this instance, that the males, if they be males, came from Corsham, and the females from Ringwood, —that is, the long-tailed form was not associated with the short-tailed: perhaps the difference may be a variation dependent upon local influence, and not a sexual distinction.

Through the kindness of the discoverer, the Rev. A. R. Hogan, to whose paper in the 'Natural History Review' I would refer the reader for an interesting account of the habits of these remarkable subterranean crustacea, I have been enabled to keep this species alive for many weeks, and have thus described it more in detail than the others. One fact may be noticed, that the absence of eyes is only after death.

3. **Niphargus Kochianus.** (Plate XXXII. fig. 3.) B.M.

Niphargus Kochianus, *Spence Bate, Proc. of Dublin Univ. Zool. and Bot. Assoc.* 1859; *Nat. Hist. Review*, vi. p. 165. f. 1.
Hogan, Proc. Dublin Univ. Zool. and Bot. Assoc. 1859; *Nat. Hist. Review*, p. 166.

Three anterior segments of the pleon produced at the postero-inferior angle to a point, and furnished with three separate hairs upon the anterior half of the inferior margin; each of the four posterior segments carrying a solitary hair upon the posterior dorsal median line. Superior antennæ about two-thirds the length of the body of the animal; flagellum about twice as long as the peduncle. Inferior antennæ having the peduncle scarcely longer than the

peduncle of the superior; flagellum as long as the peduncle. Gnathopoda alike, subequal; first pair a little the smaller: second pair having the propodos subquadrate, longer than broad, narrowest near the carpus, broadest at the palm; inferior margin carrying four fasciculi of hairs, the largest nearest to the inferior angle of the palm, which is slightly advanced, and crowned with three or four very short spines, and one long stout spine furnished near the tip with a short hair; palm slightly waved; dactylos having the inner margin corresponding with the palm. Pereiopoda slender, subequal, having the dactyla long and distinctly unguiculate, each dactylos carrying a small tooth on the internal surface, where it suddenly narrows to the unguis. Antepenultimate pair of pleopoda longer than the penultimate; ultimate (wanting).

Length $\frac{3}{20}$ths of an inch.

Hab. An old pump in a house at Ringwood, and one very recently dry at Upper Clatford, near Andover, Hants (*Rev. A. R. Hogan*).

This species, which I received from the discoverer, is named in honour of the celebrated naturalist who first described and figured these peculiar little Crustacea.

4. Niphargus puteanus. (Plate XXXII. fig. 4.)

Gammarus puteanus, *Koch, Deutschl. Crust. Myr. u. Arach.* h. 5. n. 2, 1835–42.

Body long and slender. Superior antennæ half the length of the animal. Inferior antennæ two-thirds the length of the superior. Gnathopoda uniform; propoda of each pair quadrilateral, broader than long, postero-inferior angle posteriorly produced, antero-inferior rounded; palm slightly concave and imperfectly defined; dactylos long and arcuate. Pereiopoda gradually increasing in length posteriorly. Antepenultimate and penultimate pairs of pleopoda not reaching beyond the peduncle of the posterior pair; posterior pair of pleopoda in the male one-fourth, in the female rather more than one-third the length of the animal.

Length $\frac{1}{2}$ an inch.

Hab. Draw-wells, Regensburg (*Koch*); Poitiers (*M. Guérin-Méneville*).

The description of this animal is taken from the figure given by Koch, and from a tracing from the drawing in M. Guérin-Méneville's collection. The only discrepancy in the figures of the two authors consists in a slight difference in the length of the posterior pair of pleopoda, a circumstance that has been regarded as a sexual distinction by Schiödte. The figure is taken from Guérin-Méneville, as being more correct (anatomically) than that of Koch. Koch has coloured his

figure of a greenish-grey, the lateral margin of each segment being shaded with orange, and the line of the *prima via* of a deep purple colour throughout the pereion.

56. ERIOPIS.

Eriopis, *Bruzelius, Skand. Amph. Gamm.* p. 64.

"Body elongated, compressed. Coxæ small. Superior antennæ having the peduncle slender, and the flagellum furnished with a very small secondary appendage. Inferior antennæ subpediform. Mandibles furnished with two rami (?)*, a molar tubercle, and a triarticulate appendage. First pair of maxillæ ornamented with a biarticulate palp. Palp of the maxillary feet composed of four joints. Gnathopoda having the propoda subcheliform. Three posterior pairs of pereiopoda gradually increasing in length posteriorly. Rami of the posterior pair of pleopoda very unequal; interior short; exterior nearly equal in length to the entire pleon, and consisting of two joints."—*Bruzelius.*

1. Eriopis elongata. (Plate XXXII. fig. 5.)

Eriopis elongata, *Bruzelius, Skand. Amph. Gamm.* p. 65. pl. 3. f. 12.

"Superior antennæ very long, longer than the body; flagellum slender. Inferior antennæ much shorter than the superior; flagellum shorter than the last joint of the peduncle. First pair of gnathopoda smaller than the second; propodos of the second pair oblong-ovate. Telson deeply cleft.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Deep water, Bohusia."—*Bruzelius.*

57. CRANGONYX.

Crangonyx, *Spence Bate, Proc. Dublin Univ. Zool. & Bot. Assoc.* 1859; *Nat. Hist. Review*, vi. p. 165.

Superior antennæ not longer than the inferior, having a secondary appendage. Gnathopoda subequal, not having large propoda. Pereiopoda subequal. Posterior pair of pleopoda unibranched. Telson single, entire.

1. Crangonyx subterraneus. (Plate XXXII. fig. 6.) B.M.

Crangonyx subterraneus, *Spence Bate, Proc. Dublin Univ. Zool. & Bot. Assoc.* 1859; *Nat. Hist. Review*, vi. p. 166. f. 3.

Pleon having the postero-inferior angle of the three anterior segments produced to a point, and the antero-inferior angle furnished

* "Mandibulæ ramis duobus."

with three minute hairs. Eyes imperfectly formed, lemon-colour. Superior antennæ about one-fourth the length of the animal; peduncle having the first joint shorter than the succeeding; flagellum not longer than the peduncle, secondary appendage consisting of one long and one short articulus; mandibles having the joints of the appendage short and distally increasing. First pair of gnathopoda having the propodos quadrate; palm slightly convex, oblique, armed with a few forked spines. Second pair of gnathopoda longer and more slender than the first, having the propodos long-ovate; palm very oblique and imperfectly defined, armed with a few spines, each carrying a subapical cilium; dactylos with a small internal cilium near the apex. Pereiopoda subequal, unguiculate; three posterior pairs having the basa ovate, and posteriorly fringed with short equidistant cilia. Three posterior pairs of pleopoda subequal, furnished with strong hairs or spines, each carrying a subapical cilium; the ultimate pair having the peduncle shorter than the ramus. Telson half as long as the posterior pair of pleopoda.

Length $\frac{4}{20}$ths of an inch.

Hab. Pump at Ringwood (*Rev. A. R. Hogan*).

2. Crangonyx Ermannii. (Plate XXXII. fig. 7.)

Gammarus Ermannii, *Edwards, Hist. des Crust.* iii. p. 49.

Eyes round, small. Superior antennæ longer than the inferior, flagellum longer than the peduncle, secondary appendage short. Gnathopoda subequal and alike; propoda ovate; palmæ nearly the whole length of the inferior margin, oblique, not defined. Posterior pair of pleopoda short, ramus clean, reaching but little beyond the extremity of the preceding pair.

Length $\frac{12}{20}$ths of an inch.

Hab. Warm springs of Kamtschatka (*M. Ermann*).

The description and figure are taken from the specimen preserved in the Museum of the Jardin des Plantes.

58. GAMMARELLA.

Gammarella, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857. *White, Hist. Brit. Crust.* p. 181.

Antennæ subequal; superior pair having a secondary appendage. Gnathopoda unequal, subchelate; second pair large and powerful. Posterior pair of pleopoda unibranched. Telson single, divided.

1. **Gammarella brevicaudata.** (Plate XXXII. fig. 8.) B.M.

Gammarus brevicaudatus, *Edwards, Ann. des Sc. Nat.* xx. p. 369; *Hist. des Crust.* iii. p. 53.
Gammarella Orchestiformis, *Spence Bate, Ann. Nat. Hist.* Feb. 1857. *White, Hist. Brit. Crust.* p. 181.

Eyes small, round, black. Superior antennæ half the length of the animal; first and second joints of the peduncle long, third short; flagellum as long as the peduncle, secondary appendage four-articulated. Inferior antennæ having the peduncle nearly as long as the peduncle of the superior pair; flagellum not longer than the last joint of the peduncle. First four pairs of coxæ deeper than their respective segments. First pair of gnathopoda small; carpus longer than the propodos; propodos longer than broad, palm oblique. Second pair of gnathopoda very large; carpus extremely short; propodos ovate, slightly tapering to the distal extremity, as long as the cephalon and first two segments of the pereion, palm embracing nearly the entire length of the inferior margin, armed with short equidistant spines; dactylos nearly as long as the propodos, slightly arcuate. First two pairs of pereiopoda slender; three posterior pairs robust, having the basa ovate, but increasing in diameter in each successively posteriorly; the mera, carpi, and propoda are subequal, and the dactyla very short. Three posterior pairs of pleopoda subequal, the ultimate having a single branch; but a short stout spine (the rudiment, perhaps, of a second branch) is attached laterally to the summit of the peduncle. Telson broad, short, divided nearly to the base, and subapically tipped on each division with a short spine. The animal is of a dark olive-green colour. Under the microscope, the skin is seen to be covered with stiff denticles and spots, the latter being formed by several little spines.

Length $\frac{1}{2}$ an inch.

Hab. Polperro (*Mr. Loughrin*); Morbihan (*Milne-Edwards*).

I have had an opportunity of comparing the type of M.-Edwards's species with the present, and the only differences between the drawing made from that taken at Polperro and that which I took from the specimen in the Museum of the Jardin des Plantes, are, that in the latter the eyes are somewhat reniform, the basa of the two posterior pairs of pereiopoda are distally tapering, and the dactylos of the second pair of gnathopoda is straight.

2. **Gammarella Brasiliensis.** (Plate XXXII. fig. 9.)

Gammarus Brasiliensis, *Dana, U. S. Explor. Exped.* p. 956. pl. 65. f. 10.

"*Male.*—Coxæ large; fifth much shorter than fourth. Superior pair of antennæ twice as long as inferior, about half as long as

body; base a little shorter than flagellum; flagellum consisting of numerous short, transverse articuli; setæ many, as long as diameter of articuli; secondary appendage very small and short: inferior pair but little longer than base of superior; flagellum but little longer than half the base. First pair of gnathopoda quite small; propodos subovate, hirsute below; carpus not shorter. Second pair of gnathopoda very stout; propodos large, subovate, arcuate below, and densely furnished with long slender hairs; palm not excavate nor defined. Setæ of pereiopoda short, about half as long as width of propoda, rather numerous. Three posterior pairs of pleopoda subequal.

"*Female*.—Gnathopoda small; propodos of second pair a little the larger, subovate, hirsute below; carpus hardly oblong; meros rectangular below.

"Length 4 lines.

"*Hab.* Rio Janeiro, Brazil."—*Dana.*

3. Gammarella pubescens. (Plate XXXIII. fig. 1.)

Gammarus? pubescens, *Dana, U. S. Explor. Exped.* p. 960. pl. 66. f. 3.

"Body compressed, sparsely pubescent; coxæ large. Telson small, emarginate. Superior antennæ nearly three-fourths the length of the body, and almost twice as long as the inferior; base hardly shorter than the flagellum; first and second joints subequal, long; setæ numerous, longish. Inferior antennæ densely hirsute; base much longer than flagellum, and shorter than base of superior. First pair of gnathopoda small; propodos narrow, nearly straight above, narrowing towards the apex, hirsute below. Propodos of second pair of gnathopoda oblong, large, of same form as propodos of first pair, hirsute below, palm nearly the length of the inferior margin. Three posterior pairs of pereiopoda rather long, subequal; setæ rigid, basa broad.

"Length 4 lines.

"*Hab.* Coral reef of Pitt's Island (the northern of the Kingsmills). Collected April 30, 1841."—*Dana.*

59. MELITA.

Melita, *Leach, Edinb. Encyc. art. Crust.* p. 403, & *Append.* p. 432; *Trans. Linn. Soc.* xi. p. 358.
Desmarest, Consid. sur les Crust. p. 265.
(Not *Dana.*)
Ceradocus, *Costa, Rend. della Reale Accad. delle Scienze di Napoli,* 1853, p. 170.
Mœra, *Dana, U. S. Explor. Exped.* p. 965.

Eyes round. Superior antennæ appendiculate. Inferior antennæ

shorter than the superior. Coxæ not deeper than their respective segments, those of the third pair of pereiopoda shorter than those of the fourth. First pair of gnathopoda small; second pair of gnathopoda very large. Pereiopoda subequal. Posterior pair of pleopoda having the rami very unequal, the outer one extending much beyond the preceding, the inner being rudimentary. Telson double.

The differences between this genus and *Gammarella* are very slight: the most important being the form of the telson, and the most distinguishable the respective lengths of the rami of the posterior pair of pleopoda.

1. **Melita palmata.** (Plate XXXIII. fig. 2.)

Cancer (Gammarus) palmatus, *Montagu, Linn. Trans.* vii. p. 69. t. 6. f. 4.
Melita palmata, *Leach, Edinb. Encyc. art. Crust.* p. 403; *Trans. Linn. Soc.* xi. p. 358.
Desmarest, Consid. sur les Crust. p. 264. pl. 45. f. 7.
Gammarus Dugèsii, *Edwards, Ann. des Sci. Nat.* xx. p. 368; *Hist. des Crust.* iii. p. 54.
Zaddach, Syn. Crust. Pruss. p. 6.
Gammarus palmatus, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1854, p. 453.
Frey u. Leuckart, Beitr. z. Kenntn. Wirbellos. Thiere, p. 162 (from *Bruzelius*).
Edw. Hist. des Crust. iii. p. 55.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 184.
Bruzelius, Skand. Amph. Gamm. p. 56.
Gammarus inequimanus, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Pleon having the second and third segments serrated along the inferior margin, the posterior margin of the fourth segment dorsally developed in the median line into a small tooth, and the posterior margin of the fifth having a small tooth on each side of the central line, with one or two small spines. Eyes round or subovate. Superior antennæ a little longer than the inferior; peduncle much longer than the flagellum, secondary appendage triarticulate. Inferior antennæ having the peduncle quite as long as the peduncle of the superior; flagellum scarcely longer than the last joint of the peduncle, eight-articulate, the first articulus being as long as the three succeeding. First pair of gnathopoda small, having the carpus longer than the propodos; propodos ovate, palm convex, imperfectly defined; dactylos arcuate. Second pair of gnathopoda very large; carpus short: propodos as long as the cephalon and first two segments of the pereion, superior margin arcuate, inferior straight, fringed with fasciculi of hairs; palm convex, imperfectly defined, inferior angle rounded (the outer surface of the propodos is

convex, covered anteriorly with a short fur, and along the superior margin with several rows of short hairs; the inner surface is concave, forming a hollow, into which the dactylos impinges); dactylos shorter than palm, serrated along the inner margin, and impinging against the inner surface of the propodos, and not along the margin of the palm. Three posterior pairs of perciopoda gradually increasing in length. Penultimate pair of pleopoda shorter than the preceding; ultimate extremely long, lanceolate, fringed upon each margin with short spines, each subapically tipped with a cilium. Telson double, tipped with two or three spines.
Length $\frac{13}{20}$ths of an inch.

Hab. Devon (*Montagu*); Plymouth (*Leach*); Polperro (*Mr. Loughrin*); Cultrea, Co. Down, Ireland (*Professor Kinahan*).

2. **Melita obtusata.** (Plate XXXIII. fig. 3.) B.M.

Cancer (Gammarus) obtusatus, *Montagu, Linn. Trans.* xi. p. 5. t. 2. fig. 7.
Gammarus obtusatus, *Liljeborg, Ofvers. af Kongl. Vetensk. Akad. Forhandl.* 1854, p. 452.
Bruzelius, Skand. Amph. Gamm. p. 55.
Amphithoë obtusata, *Edwards, Ann. des Sci. Nat.* xx.; *Hist. des Crust.* iii. p. 83.
White, Hist. Brit. Crust. p. 201.
Gosse, Marine Zool. i. p. 141.
Gammarus maculatus, *Liljeborg, Ofvers. af Kongl. Vetensk. Akad. Forhandl.* 1852, p. 10; *Kongl. Vetensk. Akad. Forhandl.* 1853, p. 138 (not *Johnston*).

Second, third, fourth and fifth segments of the pleon having small teeth upon the postero-dorsal margin. Eyes small, round. Superior antennæ half as long as the animal; first and second joints of the peduncle each as long again as the third; flagellum a little longer than the peduncle. Inferior antennæ having the peduncle quite as long as the peduncle of the superior; flagellum half as long as the flagellum of the superior. First pair of gnathopoda having the carpus as long as the propodos, the inferior margin fringed with fine short hairs and, anteriorly, with two short obtuse spines; propodos ovate, palm oblique, slightly convex, and armed with short equidistant spines; dactylos arcuate. Second pair of gnathopoda having the carpus short, inferior angle produced, sharp; the propodos large, quadrate, broadest at the palm; palm at right angles with the propodos, having a tubercle near the base of the dactylos, and a sharp short tooth at the inferior angle, and another near the middle upon the internal side, between which and the palm the dactylos impinges as in a groove; dactylos scimitar-shaped, being broadest near the apex.

Perciopoda subequal; basos in each of the three posterior pairs ovate. Posterior pair of pleopoda (wanting). Telson double.

Length $\frac{8}{20}$ths of an inch.

Hab. Salcomb Bay, South Devon (*Montagu*); Plymouth Sound (*Professor Kinahan* and *C. S. B.*).

The above description and accompanying figure are taken from a specimen dredged in Plymouth Sound, after it had been compared with Montagu's type, preserved in the collection of the British Museum.

3. **Melita proxima**, n. s. (Plate XXXIII. fig. 4.) B.M.

Fourth and fifth segments of the pleon having each three small teeth (the central being rudimentary) on the dorsal surface of the posterior margins. Eyes round, small. Superior antennæ more than half the length of the animal; peduncle nearly as long as the flagellum. Inferior antennæ scarcely longer than the peduncle of the superior; peduncle not reaching to the extremity of the second joint of the peduncle of the superior. First pair of gnathopoda having the carpus longer than the propodos; propodos ovate, tapering; palm oblique, imperfectly defined. Second pair of gnathopoda having the carpus short, with the inferior angle produced, rounded at the apex; propodos large, quadrate; palm slightly receding, defined by an obtuse tooth; the portion near the base of the dactylos serrated and tuberculated; a short solitary tooth within the margin upon the inner side, between which and the edge of the palm the dactylos impinges; dactylos scimitar-shaped. Perciopoda subequal, the third pair being rather the shortest; basa of the three posterior pairs having the posterior margins serrated. Posterior pair of pleopoda (wanting). Telson double.

Length $\frac{4}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*); Plymouth (*C. S. B.*).

4. **Melita Podager.** (Plate XXXIII. fig. 5.)

Gammarus podager, *Edwards, Ann. des Sci. Nat.* xx. p. 369; *Hist. des Crust.* iii. p. 53.

Pleon having the posterior dorsal margin of each segment furnished with two or three small teeth. "Eyes round. Superior antennæ a little longer than the inferior; the first joint of the peduncle armed beneath with two spines, the second joint nearly as long as the first." First pair of gnathopoda small; inferior margin parallel with the superior; palm minute; dactylos arcuate. Second

pair of gnathopoda very large; propodos equal in length to the first three segments of the pereion; the superior and inferior margins gradually increasing, but suddenly indentate posteriorly to the palm; palm waved, furnished with a few teeth, and defined by a short one. "Posterior pair of pleopoda longer than the preceding, having one ramus long and furnished with tolerably large spines, the other conical and nearly rudimentary."

Length about $\frac{1}{2}$ an inch.

Hab. Coast of Brittany (*M.-Edwards*).

The figure and description are taken from the original specimen in the Jardin des Plantes; but some portions of the specimen being wanting, I have supplied the deficiency from M.-Edwards's description.

5. **Melita gladiosa**, n. s. (Plate XXXIII. fig. 6.) B.M.

Pleon with all the segments but the last having the dorsal surface of the posterior margin furnished with three teeth. Eyes small, round. Superior antennæ two-thirds the length of the animal; first joint of the peduncle as long as the cephalon, second a little longer than the first, third shorter than either; flagellum longer than the peduncle. Inferior antennæ rather more than half the length of the superior; peduncle not so long as the peduncle of the superior. First pair of gnathopoda having the carpus as long as the propodos; propodos ovate, palm defined by a small tooth. Second pair of gnathopoda very large, having the meros inferiorly produced to an angle; carpus short, continuous with the propodos; propodos broad, ovate; palm convex, serrated, slightly oblique; dactylos scimitar-shaped. First two pairs of pereiopoda small; last three directed posteriorly, each having the posterior margin of the basos serrated. Posterior pair of pleopoda (wanting). Telson double.

Length $\frac{7}{20}$ths of an inch.

Hab. Boulogne (*M. Bouchard*).

This specimen is preserved in the Museum of the Jardin des Plantes, and formed part of the collection entrusted to me for examination.

6. **Melita valida.** (Plate XXXIII. fig. 7.)

Mœra valida, *Dana, U. S. Explor. Exped.* p. 966. pl. 66. f. 6.

"Slender. Coxæ narrow. Eyes round. Antennæ very slender: superior as long as body; base scarcely shorter than flagellum; second joint much longer than first; appendage short, three- to

five-jointed: inferior pair a little the shorter; base a little longer than base of superior pair; flagellum half shorter than base. First pair of gnathopoda quite small: right propodos of second pair very large, broadly rounded at base; upper apex not projecting, rectangular, immoveable; dactylos long and stout; left propodos very small, narrow, and narrowing to apex, ciliate. Three posterior pairs of pereiopoda subsetose. Posterior pair of pleopoda very long, nearly twice as long as either of the other pairs.

"Length nearly 3 lines.

"*Hab.* Singapore; brought up with coral in 10 feet water."—*Dana.*

7. **Melita setipes.** (Plate XXXIII. fig. 8.)

Mœra setipes, *Dana, U. S. Explor. Exped.* p. 967. pl. 66. f. 7.

"Slender. Coxæ narrow. Eyes round. Antennæ as long as body: the superior a little the longer; base shorter than flagellum; second joint sparingly longer than first; appendage five-jointed: inferior pair with the base longer than base of superior pair; flagellum shorter than base. First pair of gnathopoda quite small: right propodos of second pair very large, subtriangular, narrow at base; left propodos very small, narrow at base, with an obliquely truncate apex. Three posterior pairs of pereiopoda subequal, the fourth pair slightly the longest; joints with short setæ, meros serrate behind.

"Length 4 lines.

"*Hab.* Shores of harbour of Rio Janeiro, among the sea-weed near the fort, not far from Praya Grande."—*Dana.*

8. **Melita anisochir.** (Plate XXXIV. fig. 1.)

Mœra anisochir, *Kröyer, Tidskr.* ser. 2. i. p. 283.
Dana, U. S. Explor. Exped. p. 968. pl. 66. f. 8.

"This species, from Rio Janeiro, is very near *M. setipes*, but differs in having the setæ or hairs of the pereiopoda longer and more slender, and the third joint of the three posterior pairs of pereiopoda not serrated behind for the setæ. The superior antennæ are rather shorter than the body. Length nearly 6 lines. Some of the hairs of the three posterior pairs of pereiopoda are longer than the propodos."—*Dana.*

9. **Melita Fresnelli.** (Plate XXXIV. fig. 2.)

Amphitoë Fresnelli, *Audouin, Savigny's Egypt. Crust.* pl. 11. f. 3.
Edwards, Ann. des Sci. Nat. xx. p. 377; *Hist. des Crust.* iii. p. 38.

Cephalon furnished with a small rostrum. Pleon having all the segments serrated along the dorsal surface of the posterior margin.

Eyes round. Superior antennæ much longer than the inferior. First pair of gnathopoda small. Second pair unequal, one having the propodos much larger than the other; propodos triangular, having the palm irregular, not oblique; inferior angle slightly produced in the form of an obtuse tooth; dactylos nearly straight, curved at the apex. First two pairs of perciopoda short; the last two very long, having the basos narrow. Posterior pair of pleopoda very short.

Hab. The coasts of Egypt (*Savigny*).

The above description is taken from Audouin's figure of the animal, assisted by M.-Edwards's description. In general appearance the animal belongs to the genus *Melita*, except in the absence of the secondary appendage.

10. Melita Orchestipes.

Ceradocus orchestipes, *Costa, Rend. della Reale Accad. delle Sci. di Napoli*, 1853, p. 177.

"Rather elongate, with the back round; the posterior margin, from the second to the fifth segments of the pleon, furnished with a median dorsal spine acutely produced, the third segment having the latero-posterior margin spuriously biangulated. Superior antennæ reaching to the second segment of the pleon; inferior antennæ scarcely reaching beyond the peduncle of the superior. Propodos of the second pair of gnathopoda very large, having the palm oblique and ciliated, the inferior angle armed with teeth. Posterior pair of pleopoda extending considerably beyond the preceding pair.

"Length 7 lines.

"*Hab.* Coast of Naples."—*Costa.*

The difference between this animal and *Gammarella brevicaudata* appears to consist in the spinous character of the pleon and the length of the posterior pleopoda.

60. MŒRA.

Mœra, *Leach, Edinb. Encyc.* vii. p. 403; *Linn. Trans.* xi. p. 359. *Desmarest, Consid. sur les Crust.* p. 246.
(Not *Dana.*)
Leptothoë, *Stimpson, Marine Invert. of Grand Manan*, p. 46.

Long and slender. Superior antennæ appendiculate, much longer than the inferior. Inferior antennæ a little posterior to the superior, having the peduncle much longer than the flagellum, and not reaching to the extremity of the peduncle of the superior.

Oral appendages receding. Mandibles having an appendage. Four anterior coxæ not so deep as their respective segments; three posterior not much shorter than the preceding. Gnathopoda unequal; second pair much the larger. Pereiopoda slender, subequal. Posterior pair of pleopoda biramous, subfoliaceous. Telson double.

This description is taken from a recent specimen of the same species as that from which Leach drew up his characters. It differs from Dana's description, which is so characterized as to exclude Leach's type. It is to be regretted that Dr. Leach, who had such an intuitive perception of generic arrangement, should have so imperfectly described species.

1. **Mœra grossimanus.** (Plate XXXIV. fig. 3.)

Cancer (Gammarus) grossimanus, *Montagu*, *Linn. Trans.* ix. t. 4. f. 5.
Mœra grossimanus, *Leach*, *Edinb. Encyc.* vii. p. 403; *Linn. Trans.* xi. p. 359.
Desmarest, *Consid. sur les Crust.* p. 265.
Gammarus grossimanus, *Edw. Hist. des Crust.* iii. p. 54.
White, *Cat. B. M. Crust.* 1847; *Cat. Brit. Crust. B. M.* 1849; *Hist. Brit. Crust.* p. 185.
Gosse, *Marine Zool.* i. p. 141.
Spence Bate, *Synopsis*, *&c.*, *Ann. Nat. Hist.* Feb. 1857.
Gammarus Impostii, *Edwards*, *Ann. des Sci. Nat.* xx. p. 368; *Hist. des Crust.* iii. p. 49.

Cephalon long, nearly as long as the first three segments of the pereion. Pereion as long as the pleon; second segment having the inferior margin ciliated with five or six equidistant hairs, and convexly produced below the infero-posterior angle. Third segment of the pleon having the infero-posterior angle produced to a point. Eyes subreniform, black. Superior antennæ nearly half as long as the animal, having the first joint of the peduncle as long as the cephalon, the second half as long again as the first, the third short; flagellum about the length of the second joint of the peduncle; secondary appendage half as long as the primary. Inferior antennæ not so long as the peduncle of the superior; peduncle having the last joint shorter than the preceding; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda having the upper distal angle of the carpus produced to a point; propodos of moderate size, ovate; palm convex, oblique, not well defined. Second pair of gnathopoda much longer than the first, having the meros inferiorly and distally produced to a sharp point; carpus very short, suddenly enlarging to almost the diameter of the propodos, inferior angle produced to a point; propodos very large, as long as the cephalon and the first two segments of the pereion, and rather more than half as broad as long; in-

ferior and superior margins parallel, and fringed with fasciculi of hairs; palm oblique, irregularly notched, defined by a small sharp denticle; dactylos arcuate, outer margin fringed with equidistant hairs. Pereiopoda subequal, having the dactyla distinctly unguiculate; three posterior pairs having the basa long-ovate, posterior margins serrated. Posterior pleopoda not extending beyond the two preceding. The animal when alive is very transparent; its colour is a pale straw tinted with rose.

Length $\frac{5}{20}$ths of an inch.

Hab. Devonshire (*Montagu*). A large number were found on some sunken rope that was brought up from Plymouth Sound by my friend Mr. T. P. Smyth, where I have also dredged it. It has likewise been taken at the following places: Polperro (*Mr. Loughrin*); Penzance (*Mr. Harris*); Vendée (*M.-Edwards*).

2. **Mœra truncatipes.** (Plate XXXIV. fig. 4.) B.M.

Amphitoë truncatipes, *Spinola, MS. B. M.*
White, Cat. of Crust. in B. M. 1847.

Eyes small, round. Superior antennæ about half the length of the animal. Inferior antennæ scarcely longer than the peduncle of the superior. First pair of gnathopoda having the carpus longer than the propodos; propodos ovate, palm convex, slightly oblique, defined by a small tooth, and armed with short cilia. Second pair of gnathopoda having the carpus short, and the propodos very large, equalling in length the cephalon and first two segments of the pereion, ovate; palm convex, defined by a large tooth, and cleft into two divisions by a deep central emargination, the superior division being armed with three obtuse spines subapically tipped with a single cilium, the inferior division with three solitary cilia and a single fasciculus of hairs; dactylos as long as the palm, having a protuberance corresponding with the emargination in the palm. Basa of the three posterior pairs of pereiopoda posteriorly crenulate. Posterior pair of pleopoda having the rami not longer than the peduncle, obtuse, and tipped with stout hairs. Telson having each division ovate with an emarginate apex, from the centre of which springs a long hair and a short cilium.

Length $\frac{6}{20}$ths of an inch.

Hab. Italy (*Marquis of Spinola*, by whom the specimen was presented to the British Museum).

This species may be *Gammarus crassimanus* of Viviani, 'Phosphor. Maris,' &c. p. 10. t. 2. figs. 7 & 8; but not having seen that work, I hesitate to do more than suggest the possibility.

3. **Mœra Blanchardi**, n. s. (Plate XXXIV. fig. 5.)

Female.—Second and third segments of the pleon each dorsally produced posteriorly into a tooth. Eyes round, black. Superior antennæ nearly half the length of the animal; secondary appendage as long as the primary. Inferior antennæ longer than the peduncle of the superior. Second pair of gnathopoda having the propodos as long as the cephalon and first two segments of the pereion; palm slightly convex, fringed with a few short cilia, and defined by a short tooth; dactylos as long as the palm. Basa of the three posterior pairs of pereiopoda but slightly dilated. Posterior pair of pleopoda not longer than the preceding. Colour of the animal green, bronzed a little with red towards the dorsal surface; the appendages are generally semitransparent and of a pinkish hue, except the gnathopoda, which are faintly tinged with green.

Hab. Cape of Santo Viti, Sicily (*M. Emile Blanchard*).

The description as well as the figure are taken from a coloured drawing given to me by M. Emile Blanchard, which he made immediately after capturing the animal, early in the month of May, at which time it was carrying a number of ova of a rich purple colour. The species is named in honour of its distinguished discoverer.

4. **Mœra Danæ**. (Plate XXXIV. fig. 6.) B.M.

Leptothoë Danæ, *Stimpson, Marine Invert. of Grand Manan*, p. 46. pl. 3. f. 32.

Third segment of the pleon not produced posteriorly to an acute angle. Eyes small, round, black. First two segments of the peduncle of the superior antennæ subequal; secondary appendage nearly one-third the length of the flagellum. Inferior antennæ about one-third shorter than the superior. Coxæ nearly as deep as the segments of the pereion. First pair of gnathopoda having the carpus rather longer than the propodos, with the superior distal angle not produced to a projecting point; propodos ovate; palm acute, not defined. Second pair of gnathopoda having the meros inferiorly produced to an acute angle; carpus not so produced; propodos quadrate, rather wider at the palm than near the carpus; palm slightly oblique, uneven, defined by an obtuse point. Pereiopoda subequal, the last three pairs having the basa posteriorly serrated. Posterior pair of pleopoda much longer than the preceding, rami subequal. Telson double.

Length $\frac{14}{20}$ths of an inch.

Hab. Grand Manan, on patches of sandy bottom on which are rocks covered with sea-weed (Laminarian zone) (*Stimpson*).

This species bears a very close resemblance to *M. grossimanus*, differing only in minute details. Mr. Stimpson says that he has often taken what he presumed were young in the Coralline zone. He remarks that its motions are more sluggish than is usual with Amphipods, a circumstance in which it differs very considerably from the European type of the genus.

5. Mœra Savii.

Gammarus Savii, *Edw. Ann. des Sci. Nat.* xx. p. 369; *Hist. des Crust.* iii. p. 52.

"Superior antennæ many times longer than the inferior; peduncle of the inferior many times longer than that of the superior. First pair of gnathopoda much smaller than the second, and terminating in a rudimentary dactylos. Second pair of gnathopoda perfectly subcheliform, but small, and of nearly the same form as in *Gammarus Locusta*. The fourth segment of the pleon armed posteriorly with a long spine, which advances upon the following segment and occupies the median line; the other segments of the pleon are perfectly smooth. The three posterior pairs of pleopoda terminate equally; the last also terminate in two short and strong styliform rami. Telson, a small horizontal? lamella.

"*Hab.* The coast of Noirmoutier, Vendée."—*M.-Edwards.*

The above description is that of M.-Edwards, but it does not agree with many of the animals preserved in the bottle labelled *G. Savii*, some of which resemble *Mœra grossimanus*. A few specimens had the second pair of gnathopoda small, answering to the description of the species.

6. **Mœra pocillimanus**, n. s. (Plate XXXIV. fig. 7.) B.M.

Infero-posterior margin of the first and second segments of the pleon slightly waved, of the third crenulated. Eyes reniform. Superior antennæ half as long as the animal; flagellum as long as the peduncle, articuli not longer than broad, secondary appendage rudimentary. Inferior antennæ having the peduncle not reaching beyond the second joint of the peduncle of the superior; flagellum scarcely as long as the last joint of the peduncle. First pair of gnathopoda having the carpus as long and as broad as the propodos: propodos on the right side ovate, inferior margin ciliated; palm oblique, not defined; on the left side the palm is but little oblique, waved, and defined by an obtuse angle: dactylos robust and distinctly unguiculate. Second pair of gnathopoda having the carpus very short; propodos very long, and about half as broad as long, superior and inferior margins parallel; the infero-anterior angle formed into a nearly circular hollow or cup, over

which the dactylos closes (from which the specific name is derived); dactylos arcuate. Three posterior pairs of perciopoda having the margins of the basa serrated; the mera and carpi nearly as broad as long, having the margins serrated; propoda straight, having fasciculi of hairs on the posterior margins and of spines on the anterior; dactyla articulated on the anterior angle of the extremity of the propoda, arcuate, having a protuberance tipped with a solitary hair upon the convex margin. Pleopoda extending nearly to the same length; the posterior pair having the rami scarcely longer than the base, fringed and tipped with short spines.

Length $\frac{8}{20}$ths of an inch.

Hab. Genoa (*Captain Lewis*).

7. **Mœra pectenicrus**, n. s. (Plate XXXIV. fig. 8.)

Eyes small, irregular. Superior antennæ scarcely half the length of the animal; peduncle having the three joints subequal; flagellum as long as the peduncle, articuli not longer than broad; secondary appendage having two articuli. Inferior antennæ scarcely as long as the peduncle of the superior; flagellum scarcely longer than the last joint of the peduncle. First pair of gnathopoda having the carpus as long as the propodos, furnished with a thick bunch of hairs upon the inferior margin; propodos ovate, ciliated, palm imperfectly defined; dactylos short. Second pair of gnathopoda much larger than the first, having the meros inferiorly produced anteriorly to a point; carpus short, continuous with the propodos; propodos long-ovate, tapering; palm not defined, thickly furnished with long hairs, carrying short, distant, curved cilia upon one side, the anterior portion of the palm projecting to a tubercle; dactylos long, arcuate. First two pairs of perciopoda subequal; third pair short; fourth long, having the basos abruptly narrowing posteriorly towards the distal extremity, the inferior half of the margin being developed into a comb-like fringe; dactylos, as in all the perciopoda, distinctly unguiculate; fifth pair longer than the fourth. Pleopoda subequal, the sixth pair being slightly the longest. Telson double.

The *female* differs from the *male* in having the second pair of gnathopoda somewhat smaller and less hairy.

Length: male, $\frac{7}{20}$ths of an inch; female somewhat smaller.

Hab. New Guinea.

This species is described and figured from an example in the collection entrusted to me for examination from the Museum of the Jardin des Plantes.

8. **Mœra Loveni.** (Plate XXXV. fig. 1.)

Gammarus Loveni, *Bruzelius, Skand. Amph. Gamm.* p. 59. pl. 11. f. 9.

"Body elongate, slender; back smooth, round; coxæ having the inferior margins smooth. Superior antennæ longer than the inferior; inferior antennæ as long as the peduncle of the superior. First pair of gnathopoda smaller than the second pair; propodos triangular. Second pair of gnathopoda having the propodos large, nearly rectangular, with the palm tuberculated. Third, fourth, and fifth pairs of pereiopoda having the basa narrow, elongate. Posterior pair of pleopoda having the rami elongate, subequal. Telson deeply divided.

"Length $\frac{16}{20}$ths of an inch.

"*Hab.* Bohusia, deep water."—*Bruzelius.*

9. **Mœra furcicornis.** (Plate XXXV. fig. 2.)

Gammarus furcicornis, *Dana, U.S. Explor. Exped.* p. 951. pl. 65. f. 6.

"Slender; coxæ narrow; body sparsely pubescent. Cephalon about as long as high; lateral margin in front not prominent. Superior antennæ shorter than the body; first joint very stout, oblong; second slender, a little longer; third short; flagellum terete, a little longer than the base, having about fourteen articuli, sparsely setulose; secondary appendage half shorter than flagellum, five-articulated. Inferior antennæ much shorter than the superior, the base of the same length nearly as in that pair; third and fourth joints long, subequal; flagellum but little longer than the third joint, seven- to ten-articulated. First pair of gnathopoda small; propodos subovate. Second pair of gnathopoda stout; propodos nearly trapezoidal, broad and oblong, a little broadest at the apex, and a little obliquely truncate, below setulose, palm not at all excavate; dactylos half as long as propodos. Three posterior pairs of pereiopoda subequal, the last a little the longest; tufts of setæ numerous, short. Posterior pleopoda quite long.

"Length 3 lines.

"*Hab.* Sooloo Sea, from the shores of a small island off the harbour of Soung; collected February 5, 1842."—*Dana.*

10. **Mœra tenella.** (Plate XXXV. fig. 3.)

Gammarus tenellus, *Dana, U.S. Explor. Exped.* p. 952. pl. 65. f. 7.

"Slender; coxæ quite narrow. Eyes round, small. Superior antennæ about half as long as body; first joint not stout, second very long; flagellum little longer than base, setæ very short,

appendage half shorter than flagellum. Inferior antennæ very slender, short, base a little shorter than base of superior pair; flagellum not longer than preceding joint. First pair of gnathopoda quite small; propodos subovate, upper margin nearly straight. Second pair of gnathopoda stout; propodos broad, subrectangular, at base a little narrower, at apex nearly straight, truncate, sparsely setulose; palm not excavate, and defined below by an angle; carpus transverse, very narrow, triangular. Fourth and fifth pairs of pereiopoda subequal, the last a little the shorter; setæ rather sparse, and shortish, those on upper margin of joints very minute. Last pair of pleopoda long, extending much beyond the second.

"Length 4 lines.

"*Hab.* From coral-reefs of Viti Lebu, Feejee Islands."—*Dana.*

11. **Mœra Fuegiensis.** (Plate XXXV. fig. 4.)

Gammarus Fuegiensis, *Dana, U.S. Explor. Exped.* p. 954. pl. 65. f. 8.

"*Female.*—Near *M. tenella.* Superior antennæ slender, longer than half the body; base quite long, longer than flagellum, setose below, second joint much the longest; flagellum sixteen-articulated, articuli oblong; setæ few, not shorter than articuli, and hardly divaricate; secondary appendage four-articulated. Inferior antennæ shorter than superior; base not shorter than base of superior pair, its last two joints subequal; flagellum five-articulated, but little, if any, longer than preceding joint. Gnathopoda with the propoda quite small, narrow oblong; the margins nearly parallel, hirsute, obliquely truncate at apex: dactylos of first pair slightly longer than palm; carpus shorter, and hardly broader than propodos. Last three pairs of pereiopoda very unequal, seventh pair much the longest. Rami of last pair of pleopoda not extending as far back as second or first pair; first and second with a very long spine at apex of base, which is a little shorter than the rami.

"Length $3\frac{1}{2}$ lines.

"*Hab.* Feejee Islands."—*Dana.*

12. **Mœra quadrimanus.** (Plate XXXV. fig. 5.)

Gammarus quadrimanus, *Dana, U.S. Explor. Exped.* p. 955. pl. 65. f. 9.

"Slender; coxæ narrow. Superior antennæ half as long as the body; base a little longer than the flagellum; first and second joints long, subequal, third very short; flagellum pubescent; setæ longer than articuli, and hardly divaricate; secondary appendage

rather longer than half the flagellum. Inferior antennæ shorter; base shorter than base of superior pair; flagellum very short. First pair of gnathopoda quite small; propodos oblong, hirsute below, narrower at base; propodos of second pair equal, very large, subquadrate; apex transverse, defined by a spiniform acute immoveable tooth; palm three-dentate, teeth prominent; dactylos hardly longer than palm. Two posterior pairs of pereiopoda subequal, the fifth a little the shorter, the joints at their posterior apices densely hirsute; other setæ short.

"*Hab.* From the coral-reefs, Feejee Islands."—*Dana.*

13. **Mœra tenuicornis.** (Plate XXXV. fig. 6.)

Melita tenuicornis, *Dana, U. S. Explor. Exped.* p. 963. pl. 66. f. 5.

"*Male.*—Coxæ rather broad. Antennæ slender: superior pair longer than half the body; base a little shorter than the flagellum; second joint much the longest; flagellum terete; setæ verticillate, slender, and slightly longer than the articuli: inferior pair a little the shorter; base much longer than flagellum, and also exceeding in length the base of the superior pair; third and fourth joints subequal. Propodos of first pair of gnathopoda very small, obovate; margin hirsute; dactylos minute, and articulated to the propodos below the apex. Propodos of second pair of gnathopoda oblong, subelliptical; back much flattened, densely hirsute below; palm not excavate; dactylos rather large. First and second pairs of pereiopoda short; three posterior pairs subequal; the fourth pair a little the smallest; setæ short.

"*Female?*—Setæ of antennæ very nearly at right angles with the joints. Propodos of second pair of gnathopoda of moderate size, long obovate, apex sparingly oblique; dactylos short, shutting against lateral surface of propodos. Stylets of penultimate pair of pleopoda short; posterior pair long, simple, the branch subcylindrical and furnished with short setæ.

"Length of the male $4\frac{1}{2}$ lines, of the female? 4 lines.

"*Hab.* Bay of Islands, New Zealand; found along the shores between low- and high-water level."—*Dana.*

Authors have described this species and *M. Fresnelli* as having no secondary appendage to the superior antennæ, in which case a new genus must be formed to receive them,—a responsibility that I do not like to take upon myself without seeing the animals, knowing how difficult it is at all times to observe the secondary appendage of the superior antennæ, owing to its occasional minuteness, or perhaps accidental loss.

61. EURYSTHEUS.

Eurystheus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 181.
Gammarus (Division ++ *a*), *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1854, p. 455.

Cephalon produced anteriorly. Pereion and pleon equally long. Eyes situated at the base of the superior antennæ, instead of between the bases of the two pairs. Antennæ subequal, long and slender: superior antennæ having a secondary appendage; inferior antennæ arising posteriorly to the superior. Gnathopoda subchelate, unequal. Pereiopoda long, slender. Posterior pair of pleopoda biramous. Telson short, cylindrical.

This genus is separated from *Maera* by the form of the cephalon and telson.

1. Eurystheus erythrophthalmus. (Plate XXXV. fig. 7.) B.M.

Gammarus erythropthalmus, *Liljeborg in Ofvers. af Kongl. Vetensk. Akad. Forhandl.* 1854, p. 455.
Eurystheus tridentatus, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 181.

Eyes reniform, red. Superior antennæ rather more than half the length of the animal; peduncle longer than the flagellum; secondary appendage half the length of the primary. Inferior antennæ scarcely as long as the superior; flagellum a little longer than the last joint of the peduncle. First pair of gnathopoda small; carpus longer than the propodos; propodos triangulate, palm oblique, equal in length to the inferior margin. Second pair of gnathopoda large, long; carpus as long as, and continuous with, the propodos, inferior margin armed with four fasciculi of hairs; propodos long, tapering, palm very oblique, concave, armed with three obtuse teeth, inferior margin shorter than palm and carrying three fasciculi of hairs. Pereiopoda long, slender; three posterior pairs having each an oval basos and long propodos, which latter is distally furnished on the posterior side with a fasciculus of long hairs; ultimate pair of pereiopoda reaching a little beyond the two preceding pairs. Telson half the length of the peduncle of the posterior pair of pleopoda, tubular.
Length $\frac{1}{4}$ of an inch.

Hab. Macduff (*Mr. Gregor*); Banff (*Mr. Edward*); Skye (*Mr. Barlee*); Oxwich Bay, Glamorgan, and Plymouth (*C. S. B.*); Kullaberg in Scania (*Liljeborg*).

2. **Eurystheus bispinimanus**, n. s. (Plate XXXV. fig. 8.) B.M.

Eyes reniform. Antennæ (wanting). First pair of gnathopoda long and slender, having the carpus as long as the propodos; propodos not dilated, tapering, palm very oblique, not defined; dactylos nearly as long as the propodos, serrated upon the inner margin. Second pair of gnathopoda having the carpus shorter than, but continuous with, the propodos; propodos two-thirds as broad as long, palm not longer than the inferior margin, concave, armed with two obtuse spines and one short obtuse submarginal tooth; dactylos arcuate, serrated along the inner margin. Posterior pair of pleopoda scarcely reaching beyond the preceding pairs. In other respects the animal differs but little from *E. erythrophthalmus*.

Length $\frac{3}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*).

62. AMATHIA.

Amathia, *Rathke, Fauna der Krym.*
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Inferior antennæ longer than superior; superior pair having a secondary appendage; mandibles having an appendage. Maxillipeds subpediform, having two small plates arising from the basos and meros; dactylos unguiculate. Gnathopoda subchelate, subequal; propoda not largely dilated. Perciopoda subequal; coxa of the fourth pair shorter than that of the third. Posterior pair of pleopoda biramous. Telson single, squamiform.

1. **Amathia Sabinii.** (Plate XXXV. fig. 9.) B.M.

Gammarus Sabinii, *Leach, App. Ross's First Voyage*, ii. p. 178.
Sabine, App. Parry's Voyage, p. 233. t. 1. f. 8–11.
White, Cat. Crust. B. M. 1847.
Kröyer, Grönl. Amfip. p. 16. t. 1. f. 3.
Edwards, Ann. des Sci. Nat. xx. p. 368; *Hist. des Crust.* iii. p. 50.
Stimpson, Marine Invert. Grand Manan, p. 54.
Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl. 1854, p. 447.
Bell, Append. to Belcher's Last Arctic Voyage, p. 404.
Rathke, Fauna Norvegica, Nov. Act. Acad. Leop. p. 71.
Thompson, Annals of Philosophy, xiv.
Amathia carinata, *White, Hist. Brit. Crust.* p. 182.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
Bruzelius, Skand. Amph. Gamm. p. 50.

Cephalon produced to a small rostrum. Anterior segments of the pereion carinated; the posterior, together with the anterior of the pleon, carinated and posteriorly denticulated; the dorsal apex of

the fourth and fifth segments obtusely rounded. Eyes subreniform. Superior antennæ scarcely half the length of the animal; joints of the peduncle subequal: flagellum as long as the peduncle, articuli broader than long; secondary appendage small. Inferior antennæ having the peduncle scarcely as long as that of the superior; flagellum as long again as that of the superior, articuli broader than long. First pair of gnathopoda having the carpus half as long as the propodos, slightly produced inferiorly; propodos tapering, palm imperfectly defined, armed with two or three strong spines. Second pair of gnathopoda uniform with the first. Pereiopoda subequal, the three posterior pairs gradually increasing in length. Antepenultimate and penultimate pairs of pleopoda armed with short strong spines on the upper or posterior margin of the rami; ultimate pair having the rami equal, lanceolate, and fringed with cilia. Telson lanceolate.

Length: male, $\frac{3}{4}$ of an inch; female, rather more than 1 inch.

Hab. Baffin's Bay (*Admiral Ross* and *General Sabine*); Godthaab, Greenland, 60 fathoms (*Holböll*); Iceland (*Drewsen*); Norway (*Rathke*); Eastern shores of Scandinavia (*Liljeborg*); Shetland (*Mr. Barlee*); Banff (*Mr. Edward*); Sligo (*Mr. Thompson*); Grand Manan, U.S. (*Stimpson*).

2. **Amathia carinata.** (Plate XXXV. fig. 10.)

Amathia carinata, *Rathke, Fauna der Krym*, taf. 29.

This species is so similar to *A. Sabinii*, that had not Rathke, in the 'Nova Acta Acad. Leopold.' p. 71, expressly stated that it is distinct, I should have been inclined to unite them. I have merely seen the figure of *A. carinata* in the 'Fauna der Krym,' judging by which, the only differences appreciable are the following: the less sharp character of the dorsal carinal teeth, each being rounded at the apex; the antennæ being more nearly equal in length; and the gnathopoda having the propoda less tapering and the palmæ more defined.

Hab. Balaklava Bay, Crimea, amongst Fucus (*Rathke*).

3. **Amathia dentata.**

Gammarus dentatus, *Catalogue of the Crustacea in the Museum of the Jardin des Plantes.*

I could not detect any appreciable distinction between this and the two preceding species; but having neglected to make a drawing of the animal, I am induced to separate it from both of them on account of the distance of their respective habitats.

Hab. Pondicherry (*M. Perrottet*).

4. **Amathia carino-spinosa.** (Plate XXXV. fig. 11.) B.M.

Cancer carino-spinosa, *Turton, Linn. Syst. Nat.* iii. p. 760 (*Turton's edition*).
White, Cat. Crust. B. M. 1847; *Cat. Brit. Crust. B. M.* 1850.
Dexamine carino-spinosa, *White, Hist. Brit. Crust.* p. 178.
Amphithoë carino-spinosa, *Gosse, Mar. Zool.* i. p. 141.
Amphithoë Moggridgei, *Spence Bate, Ann. Nat. Hist.* 2 ser. vii. p. 318. pl. 10. f. 10, 1851.
Gosse, Mar. Zool. i. p. 141.
Gammarus angulosus, *Rathke, Nov. Act. Acad. Leopold.* xx. p. 72. t. 3. f. 3.
Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl. 1854, p. 447.
Bruzelius, Skand. Amph. Gamm. p. 50.
Frey u. Leuckart, Beitr. z. Kenntn. Wirbellos. Thiere, p. 162 (in *Bruzelius*).

Rostrum small. Carina upon the cephalon and anterior segments of the pleon scarcely defined: a tubercular ridge also exists on each side, commencing at the fifth segment of the pereion, and terminating in the fourth segment of the pleon, where it becomes confluent with the dorsal carina.

Length about $\frac{1}{4}$ of an inch.

Hab. Eastern shores of Scandinavia; Menai Straits (*Mr. Joshua Alder*); Langland Bay, Glamorgan (*C. S. B.*); Tenby and Falmouth (*Mr. Webster*); Polperro (*Mr. Loughrin*); Isle of Wight (*Old Collection in B.M.*).

Rathke (*l. c.* p. 74) states that it closely resembles *Gammaracanthus loricatus* of Sabine and *G. pinguis* of Kröyer, and that it is distinct from *A. Sabinii* and *A. carinata*.

Upon comparing the specimens which I originally called *Amphithoë Moggridgei* with Rathke's figure and description of *Gam. angulosus*, I have no doubt of their identity; and the difference between them and *A. Sabinii* appears to be a variation dependent upon altered conditions. In recording them as separate species, I do so more in deference to the opinions of Rathke, Liljeborg, and Bruzelius, than from a conviction of there being any real distinction between them.

The central habitat of *A. Sabinii* is the coast of Greenland, whence the original and largest specimens have been brought. Those which I have received from Banff, through the kindness of that indefatigable naturalist, my valued correspondent Mr. Edward, are nearly as large; but the specimens that have been sent to me from localities further south are smaller. A single specimen lent to me by Mr. Alder for examination, dredged in the Menai Straits, is scarcely half the size of the specimens taken in Scotland. Those which I found on the shores of South Wales are still smaller, as are also those sent to me from the southern coast of Cornwall, where the species appears to be likewise diminishing in numbers; and in the neighbourhood of Plymouth I have looked for specimens, but have not succeeded in finding any. If the opinion that *A. Sabinii* and *A. carino-*

spinosa are the same species be an error, they curiously represent each other: for where the larger form abounds, the small adult specimens appear to be rare, if not altogether absent.

5. Amathia pinguis.

Gammarus pinguis, *Kröyer, Grönl. Amfip.* p. 24. pl. 1. f. 5.
Edwards, Hist. des Crust. iii. p. 50.

"Pleon terminated by a telson, single, rounded, and armed with two little spines. Gnathopoda nearly linear.

"*Hab.* Greenland."—*Edwards.*

It is with much doubt that I place this animal in this genus; but the short description of M.-Edwards distinctly shows that it does not belong to *Gammarus*.

63. PALLASEA, n. g.

Superior antennæ longer than the inferior, and furnished with a secondary appendage. Inferior antennæ subpediform, having the peduncle considerably longer than the flagellum; the flagellum short and stout. Mandibles having an appendage. Maxillipeds subpediform, having a small squamiform plate to the ischium only. Gnathopoda uniform, moderately large. Perciopoda subequal. Posterior pleopoda biramous. Telson single, cleft.

This genus is very nearly allied to *Amathia*, from which it differs more in the general aspect of the animal than in structural details. The form of the inferior antennæ, together with the altered condition of the maxillipeds, are appreciable characters that distinguish the genera from each other.

1. Pallasea Cancellus. (Plate XXXVI. fig. 1.) B.M.

Oniscus cancellus, *Pallas, Spicil. Zool.* fasc. 9. p. 52. pl. 3. f. 18.
Gammarus cancellus, *Fabricius, Ent. Syst.* ii. p. 515.
Herbst, Krabben, ii. p. 125. pl. 25. f. 12 (*after Pallas*).
Latreille, Hist. des Crust. vi. p. 317.
Amphithoë cancellus, *Latreille, Encyc. Méthod.* pl. 328. f. 6 (*after Pallas*); *Règne Animal*, 1 édit. iii. p. 47.
Desmarest, Consid. sur les Crust. p. 268.
Edwards, Ann. des Sci. Nat. xx. p. 377; *Hist. des Crust.* iii. p. 37.
Gammarus Latreillii, *Guérin-Méneville, MS. Mus. Jardin des Plantes.*

Cephalon having a minute rostrum. Pereion having a rudimentary dorsal carina and a large projecting tubercle towards the infero-posterior angle of each segment. Pleon armed with a slight dorsal carina, and a prominent tubercle on the first two segments and rudimentary ones on the next two. Eyes subreniform. Superior an-

tennæ nearly half the length of the animal; peduncle as long as the flagellum; secondary appendage short. Inferior antennæ having the peduncle a little shorter than the peduncle of the superior antennæ; flagellum scarcely longer than the last joint of the peduncle. Gnathopoda subequal, having the coxæ as deep as the pereion: first pair having the propodos tapering, palm oblique, fringed with short equidistant hairs, and imperfectly defined by several short blunt spines: second pair having the propodos broader and less tapering, palm less oblique, fringed with a row of equidistant hairs, imperfectly defined by three stout blunt spines; inferior margin furnished with several fasciculi of two kinds of hairs—the one armed with short coarse denticular spines on one side, the other with fine vertical hairs. First two pairs of pereiopoda uniform; coxæ of the second pair furnished near the centre with a prominent tubercle. Three posterior pairs of pereiopoda having their basa ovate, dilated, and suddenly compressed. Three posterior pairs of pleopoda having the rami free from hairs, those of the penultimate pair shorter than those of the preceding. "Posterior pair not longer than the antepenultimate*." Telson scarcely longer than broad, widely cleft at the apex.

Length $1\frac{1}{2}$ inch.

Hab. Rivers of Siberia (*Pallas et auct.*).

This species is very abundant, and is made use of by the inhabitants of Siberia as a delicate article of food; it is also devoured voraciously by birds.

64. GAMMARACANTHUS, n. g.

Dorsal margin carinated, and having the posterior central margin with one or more segments produced posteriorly. Pleon without fasciculi of spines. Superior antennæ having a secondary appendage. Inferior antennæ longer than the superior. Mandibles with an appendage. Maxillipeds subpediform, unguiculate, having the squamiform internal processes but slightly developed. Gnathopoda subchelate and subequal, having the carpus inferiorly produced. Coxæ of the third pair of pereiopoda not so deep as the fourth. Posterior pair of pleopoda biramous; rami foliaceous. Telson double.

This genus is selected from that of *Gammarus* of authors generally, comprising the Division AA. of M.-Edwards, and + 1 *a.* of Liljeborg.

* Edwards, *l. c.* The specimen from which this description is taken has this portion wanting.

1. **Gammaracanthus loricatus.** (Plate XXXVI. fig. 2.) B.M.

Gammarus loricatus, *Sabine, Parry's First Voyage, Append.* p. ccxxxi. pl. 1. f. 7.
Kröyer, Grönl. Amfip. p. 22. pl. 1. f. 4.
Edwards, Hist. des Crust. iii. p. 52.
Ross, Appendix to Parry's Third Voyage, p. 118; *Polar Voyage*, p. 204; *Appendix to Second Voyage in Search of a N.W. Passage*, p. lxxxix, 1835.
Bell, Belcher's Last of the Arctic Voyages, Append. p. 405.
MS. in Cat. Hunt. Museum, p. 93.

Cephalon having a long, carinated, depressed rostrum. Pereion dorsally carinated, the three posterior segments having the carina produced posteriorly into a tooth; each segment has the lateral margin externally raised. Pleon dorsally carinated, each segment, except the sixth, having the carina posteriorly produced into a sharp tooth. Eyes imperfectly round. Superior antennæ half the length of the animal; peduncle as long as the flagellum, third joint shorter than the preceding, second shorter than the first; secondary appendage longer than the last joint of the peduncle. Inferior antennæ one-third shorter than the superior; peduncle somewhat longer than the peduncle of the superior. First pair of gnathopoda having the carpus produced to an inferior angle; propodos subovate, broadest at the carpal extremity; palm longer than the inferior margin, oblique, convex both anteriorly and posteriorly, forming a central depression, into which the dactylos, which is shorter than the palm, impinges: second pair uniform with the first. Coxæ gradually increasing in depth to the second pair of pereiopoda. First two pairs of pereiopoda subequal; third pair of pereiopoda longer than the second, fourth much longer than the third, fifth much shorter than either of the two preceding; basa of the last three pairs but slightly dilated. Penultimate pair of pleopoda shorter than the preceding; posterior pair much longer than either of the two preceding, peduncle not more than half as long as the rami; rami equal in length, obtusely lanceolate, margins fringed with cilia. Telson consisting of two small, round, foliaceous plates.

Length $1\frac{3}{4}$ inch.

Hab. Prince Regent's Inlet, abundant (*Sir J. C. Ross*); Arctic Seas (*Admiral Parry* and *Sir Edward Belcher*); Greenland (*Kröyer*).

Sir James Ross, in the Appendix to the 'Second Voyage in Search of a North-west Passage,' remarks that "in some specimens the rostrum is so very minute as hardly to be distinguishable, whilst in others it is very large." The close resemblance which this animal bears to *Atylus carinatus*, in which the rostrum is much smaller, may have conduced to the belief of this apparent variation.

This well-known species is taken as the type of *Gammaracanthus*; and, if compared with the type of the genus *Gammarus*, it will be found, whilst having many characters in common, to differ in general form as well as in structural detail. It approaches nearer to *Amathia* than to *Gammarus*.

2. Gammaracanthus mucronatus.

Gammarus mucronatus, *Say, Journ. Acad. Philad.* i. pt. 4. p. 376.
Edwards, Ann. des Sc. Nat. xx. p. 368; *Hist. des Crust.* iii. p. 15.

"Eighth, ninth, and tenth segments of the body mucronate above. Eyes irregularly reniform, blackish, truncate above, and forming an angle towards the base of the upper antennæ. Antennæ subequal: superior pair with about twenty articuli in the flagellum; secondary appendage attaining the tip of the fourth articulus.

"Length not half an inch.

"*Hab.* Florida, coast of the United States.

"In the male, the dorsal teeth are often less distinct than in the female; sometimes they are wanting on the eighth and tenth segments, and very small upon the ninth."—*Say.*

3. Gammaracanthus macrophthalmus.

Gammarus macropthalmus, *Stimpson, Marine Invert. of Grand Manan*, p. 55.

"This species strongly resembles *Amathia Sabinii* in colour and general appearance. The back, however, is carinated only at the pleon, which readily distinguishes it. The secondary appendage of the superior antennæ is minute and scarcely perceptible. Eyes very large, subreniform, near each other. Coxæ small. Fourth pair of pleopoda as long as the fifth, both having the outer rami shorter than the inner ones; last pair with broad lanceolate rami, shorter than in *A. Sabinii*. Colour sometimes bright crimson, but usually mottled red and flake-white; very variable.

"Length 0·5 inch: of the inferior antennæ, which are the longer, 0·2.

"*Hab.* Dredged on rocky bottoms in the Laminarian zone, and occasionally taken at low-water mark."—*Stimpson.*

65. GAMMARUS.

Gammarus, *Fabricius, Ent. Syst.* ii. p. 514.
Latreille, Hist. Nat. des Crust. vi. p. 315.
Leach, Edinb. Encyc. art. Crustaceology, vii. p. 402; *Trans. Linn. Soc.* xi. p. 359.
Lamarck, Hist. des Anim. sans Vert. v.
Desmarest, Consid. sur les Crust. p. 265.
Edwards, Ann. des Sc. Nat. xx.; *Hist. des Crust.* iii. p. 42, Division 1. A. *a.*
Krøyer, Grönl. Amfip. p. 27.

Gammarus, *Rathke, Fauna der Krym*, p. 372, *and Nov. Act. Leop.* 1843.
White, Hist. Brit. Crust. p. 182.
Gosse, Mar. Zool. i. p. 141.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.
Liljeborg (Division + 1. *b.*), *Ofvers. af Kongl. Vet. Akad. Forhandl.* 1854, p. 446.
Bruzelius (Division *a a—b*), *Skand. Amph. Gamm.* p. 50.

Slender, laterally compressed. Cephalon not produced into a rostrum. Pereion and pleon subequal in length. Three posterior segments of the pleon having each two or more fasciculi of short stiff spines. Eyes reniform, oval or linear. Antennæ long, slender, filiform, having the peduncle subequal with the peduncle of the inferior, and carrying a secondary appendage. Mandibles having an appendage. Maxillipeds having a squamiform plate, arising from the basos and ischium. Gnathopoda subequal, not largely developed. Pereiopoda subequal; coxæ of the three posterior pairs much shorter than those of the anterior. Posterior pair of pleopoda biramous. Telson double.

The genus is here confined to *Gammarus* proper. It is both more convenient and more natural to place those species in distinct genera which have been arranged by authors under separate divisions of the genus.

1. **Gammarus semicarinatus**, n. s. (Plate XXXVI. fig. 3.)

Last segment of the pereion and first three of the pleon carinated and posteriorly produced to a sharp tooth. Fourth and fifth segments of the pleon carinated and produced to a tubercle which is crowned with a fasciculus of spines, on each side of which are the fasciculi which are common to the genus. Eyes subreniform. Superior antennæ half the length of the animal; peduncle short, first joint little more than half the length of the cephalon, second shorter than the first, third shorter than the second; flagellum three times as long as the peduncle, having the articuli much longer than broad; secondary appendage having but two articuli. Inferior antennæ half the length of the superior; peduncle longer than the peduncle of the superior. Gnathopoda subequal: first pair having the propodos long-ovate, tapering, palm not defined, armed with three or four short obtuse spines and a few hairs; dactylos arcuate: second pair having the propodos ovate, palm slightly oblique, bilobed, armed with three or four short obtuse spines and a few hairs. Pereiopoda subequal. Posterior pair of pleopoda having the rami unequal, the outer being a little longer than the inner.

Length $\frac{8}{20}$ths of an inch.

Unfortunately the habitat of this crustacean is not known. The species is of considerable interest, as associating the genera *Amathia* and *Gammaracanthus* with *Gammarus*. I know of no other distinctly carinated species that carries the dorso-caudal fasciculi of spines.

This may be *Gammarus mucronatus* of Say; but the specimens in the British Museum labelled as belonging to this last-named species do not correspond with the very meagre description of the author, so that I do not feel justified in assuming Say's name without a clearer conception of the North American type.

This species is preserved in the Museum of the Jardin des Plantes, it having formed a portion of the undescribed collection entrusted to me by Professor Milne-Edwards for description in this Catalogue.

2. Gammarus Pulex. (Plate XXXVI. fig. 4.)

Gammarus Pulex, *Fab. Ent. Syst.* ii. p. 516. no. 7.
Latreille, Gen. Crust. et Ins. i. p. 58.
Koch, Deutschl. Crust., Myr. u. Arachn. p. 36. no. 21.
Cancer Pulex, *Linn. Syst. Nat.* iii. p. 1055. no. 81.
Roesel, Ins. iii. p. 351. t. 62. f. 1–7.

"*G.* cæsius, dorso fusco-testaceus, segmentis posterioribus postice medio in dentem acutum productis."—*Koch.*

Length 6 to 7 lines.

Hab. In large streams and ponds, generally found in great abundance.

Koch remarks that the animal is readily distinguished from *Gammarus fluviatilis** by the dorsal teeth upon the first three segments of the pleon. The colour throughout is of a greyish-brown mottled with yellow, having the dorsal dental processes blotched with scarlet; there are similar spots on the sides of the animal, and also smaller ones of the same colour on the coxæ.

Authors generally appear to have given the names of *Pulex* and *fluviatilis* indifferently to the common freshwater form. Koch and Latreille have figured *G. Pulex* with dorsal teeth. I have therefore confined the latter name to this species, and have not quoted any authorities besides those Koch has given.

3. Gammarus subcarinatus. (Plate XXXVI. fig. 5.) B.M.

Gammarus subcarinatus, *Stimpson, MS.*

First three segments of the pleon having the dorsal median line slightly elevated into a carina, and terminating posteriorly in a fasciculus of short spines; a fasciculus of spines also exists upon each side, increasing in importance posteriorly upon all the segments of the pleon: the last three segments of the pleon have no central carina. Eyes oval. Antennæ subequal, one-third the

* *G. fossarum*, Koch.

length of the animal. First pair of gnathopoda larger than the second; propodos broad-ovate; palm slightly concave and oblique, armed with nine or ten short truncated teeth and several hairs; dactylos arcuate, having an obtuse projection near the centre. Second pair of gnathopoda having the propodos long-quadrate; palm slightly concave, not oblique, armed with seven or eight short truncated teeth; inferior margin indented posteriorly to the palm, and furnished with several fasciculi of long hairs. Pereiopoda subequal, spinous. Posterior pair of pleopoda having the rami unequal, the outer being three times longer than the inner. Telson not spinous.

Length 1 inch.

Hab. Behring's Straits (*Stimpson*, to whom I am indebted for the specimen from which the figure and description are taken).

4. **Gammarus Locusta.** (Plate XXXVI. fig. 6.) B.M.

Cancer Locusta, *Linn. Faun. Suec.* 2nd edit. p. 497; *Syst. Nat.* p. 1055.
Cancer (Gammarus) Locusta, *Montagu, Linn. Trans.* ix. p. 92. t. 4. f. 1.
Gammarus Locusta, *Leach, Edinb. Encyc. art. Crust.* p. 402; *Linn. Trans.* xi. p. 359.
Desmarest, Consid. sur les Crust. p. 267.
Edwards, Ann. des Sc. Nat. xx. p. 369; *Hist. des Crust.* iii. p. 44.
Kröyer, Grönl. Amfip. p. 27.
Rathke, Fauna der Krym, p. 372. pl. 5. f. 11.
White, Hist. Brit. Crust. p. 182; *Cat. Brit. Crust. in B. M.* p. 51; *Cat. Crust. B. M.* p. 87.
Gosse, Mar. Zool. i. p. 141. f. 257.
Zaddach, Synops. Crust. Pruss. Prodr. p. 4.
Bruzelius, Skand. Amph. Gamm. p. 52.
Gammarus Duebenii, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1851, p. 22.
Gammarus mutatus, *Liljeborg, Ofvers. af Kongl. Vetensk. Akad. Forhandl.* 1852, p. 447.

Three anterior segments of the pleon having the infero-posterior angle produced to a sharp, posteriorly directed point. Eyes long, reniform, white. Superior antennæ having the first two joints of the peduncle subequal in length, and, together, rather longer than the cephalon, the third not more than half as long as the second; flagellum long and slender, being four times as long as the peduncle; secondary appendage one-third as long as the primary. Inferior antennæ nearly as long as the superior, having the last three joints subequal, and extending nearly the whole length of the last joint beyond the peduncle of the superior. Gnathopoda having the coxæ as deep as their segments: first pair shorter than the second, having the carpus increased to the breadth of the propodos; propodos ovate, palm convex, not defined, having the inferior and superior margins fringed with fasciculi of hairs: second

pair having the carpus and propodos rather longer than in the first, but otherwise formed like them, except that the palm is oblique, not convex, and defined by a small tooth. Pereiopoda having the coxæ of the first two pairs as deep as their segments, of the last three pairs about one-fourth as deep; basa of the last three pairs ovate; the other joints generally spinous. Antepenultimate pair of pleopoda longer than the penultimate; penultimate scarcely reaching beyond the peduncle of the ultimate; ultimate having the peduncle very short, rami subequal, three times as long as the peduncle,—the inner branch armed upon the internal margin with four or five short equidistant spines and as many plumose hairs, one of each being lodged in as many separate depressions; the outer branch has the lower margin fringed with fasciculi of short spinules. Telson as long as the peduncle of the posterior pair of pleopoda, and furnished with a few short stiff spines.

Length of Icelandic specimens, $1\frac{1}{2}$ inch; of British, $\frac{3}{4}$ of an inch.

Hab. Arctic Seas, and all round Europe. Some large specimens in the British Museum were presented by M. Drewsen.

The colour of this species is generally of a bluish-green, mottled with darker spots of the same, and a few widely dispersed spots of bright red or scarlet; these last, as far as my experience goes, may, in the living animal, be confidently trusted in as diagnostic of the species: one is situated upon the second, third, and fourth segments of the pereion, a small one on each coxa of the posterior pairs of pereiopoda, and one upon each of the three anterior segments of the pleon. Under the microscope the structure of the integument is seen to have a granulated appearance, while certain arrow-headed spines, surrounded by an areola, appear to pierce the integument. Upon the three anterior segments of the pleon is a curved row of minute cilia, each cilium rising through a ring, the whole surrounded by an areola.

Leach, in the 'Edinburgh Encycl.,' remarks that the females carry their young about with them after their exclusion; and I am enabled to state, upon the authority of my valued correspondent Dr. James Salter, that the larvæ, after having quitted the pouch of the mother, will return to it again on being alarmed; and that, until they have acquired confidence, they accompany their mother in a small crowd as she swims through the water.

5. Gammarus fluviatilis. (Plate XXXVII. fig. 1.)

Gammarus fluviatilis, *Roesel, Insectenbelustigungen*, iii. pl. 52*.
Gammarus Rœselii, *Gervais, Ann. des Sc. Nat.* 2 sér. iv. p. 128*.
Gammarus aquaticus, *Leach, Linn. Trans.* xi. p. 359.
Gammarus fossarum, *Koch, Deutschl. Crust., Myr. u. Arachn.* h. 5. no. 1.

Very much like *G. Locusta*. Eyes subreniform, black. Superior

* From M.-Edwards, *Hist. des Crust.* iii. p. 45.

antennæ having the second joint of the peduncle shorter than the first, third shorter than the second; flagellum twice as long as the peduncle, having about twenty-four articuli, broader than long; secondary appendage having about six articuli. Inferior antennæ having the olfactory organ well developed; last two joints of the peduncle subequal; flagellum shorter than the peduncle. Gnathopoda subequal: propodos of the first pair long-ovate, tapering, having the palm very oblique; of the second pair ovate, palm slightly oblique and concave. Penultimate pair of pleopoda as long as the preceding; posterior pair of pleopoda having the rami subequal and plumose. Colour generally of a yellowish-brown. Length $\frac{3}{4}$ of an inch.

Hab. In most of the freshwater streams of England, and probably of all Europe.

6. **Gammarus Edwardsii.** (Plate XXXVII. fig. 2.)

Gammarus marinus, *Edwards, Hist. des Crust.* iii. p. 46 (not *Leach*).
White, Hist. Brit. Crust. p. 183.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.

Very similar in general appearance to *G. Locusta*, but more robust. Eyes reniform. Superior antennæ about one-third the length of the animal; first joint of the peduncle nearly as thick as long, second a little shorter and narrower, third still more so; flagellum nearly as long again as the peduncle; secondary appendage three-articulated. Inferior antennæ having the peduncle a little longer than the peduncle of the superior, fourth and fifth joints subequal; flagellum scarcely as long as the last two joints of the peduncle. Gnathopoda short: first pair having the propodos broad-ovate, palm oblique, convex, not defined; second pair having the propodos long-ovate, palm straight, defined, inferior angle produced. Posterior pair of pleopoda having the rami not longer than the peduncle.
Length $\frac{3}{4}$ of an inch.

Hab. Starcross, Devon, in a pool left by the tide, into which fresh water flows (*C. S. B.*). Coast of France (*Milne-Edwards*).

The animal from which I have taken the above characters agrees with Milne-Edwards's description of *Gammarus marinus*, except in the length of the secondary appendage of the superior antennæ, which he states to be longer than in *G. Locusta*, whereas in my specimen it is considerably shorter; but this is a character that varies during the growth of the animal, and is one very liable to be influenced by change of conditions. In fact, this species, as stated by M.-Edwards, is very possibly only a variety of *G. Locusta*.

Milne-Edwards considers it to be identical with *Gam. marinus* of Leach and Desmarest; but these authors (the latter following the former) state that the rami of the last pair of pleopoda are unequal.

In changing the specific name, I have adopted that of the discoverer of the species; for to no one is Carcinology more indebted than to Professor Milne-Edwards.

7. Gammarus Camptolops. (Plate XXXVII. fig. 3.) B.M.

Gammarus Camptolops, *Leach, Sam. Ent. U. Comp.* p. 104.
White, Hist. Brit. Crust. p. 183; *Cat. Crust. B. M.* 1847, p. 88; *Cat. Brit. Crust. B. M.* 1849.
Gosse, Marine Zoology, i. p. 141.
Gammarus Camylops, *Leach, Edinb. Encyc.* vii. p. 403.
Gammarus Campylops, *Leach, Linn. Trans.* xi. p. 360.
Desmarest, Consid. sur les Crust. p. 267.
Edwards, Ann. des Sc. Nat. xx. p. 267; *Hist. des Crust.* iii. p. 48.
Gammarus Locusta, *Liljeborg, Öfvers. af Kongl. Vetensk. Akad. Förhandl.* 1854, p. 448.

Like *Gammarus Locusta*. Eyes linear, black; occasionally shaped like the letter S. Superior antennæ shorter than the inferior; flagellum not longer than the peduncle. Inferior antennæ a little longer than the superior. Gnathopoda subequal, uniform; propoda tapering, palmæ oblique. Three posterior pairs of perciopoda having the basa disc-shaped. Penultimate pair of pleopoda shorter than the preceding, and reaching to the extremity of the peduncle of the ultimate; ultimate having the rami unequal, one branch being as long again as the other, both fringed with short, sharp spinules.

Length $\frac{1}{2}$ an inch.

Hab. Arran Island (*Dr. Leach*); Shetland (*Mr. Barlee*); Belfast (*Mr. Hyndman* and *Mr. Thompson*) (*Thompson's Nat. Hist. of Ireland*, iv. p. 395).

The above description is taken from Leach's type specimen in the British Museum. The habitats given are those from which specimens with the crooked eyes have been taken; but this is a feature by no means to be depended upon as a specific character. Among a considerable number that were sent to me by my much-valued friend Mr. Barlee, the eyes were as frequently, if not more often, of a linear form; I am therefore inclined to believe that an undescribed variety, found all round our coast, and which answers in all respects except the peculiar sigmoid eye, belongs to this species. It is an intermediate form between *G. Locusta* and *G. gracilis*. Liljeborg's description of *G. Locusta* differs only in the form of the eyes from *G. Camptolops*.

8. **Gammarus Sitchensis.** (Plate XXXVII. fig. 4.) B.M.

Gammarus Sitchensis, *Brandt, Sibirische Reise, Zool.* i. p. 137. pl. 6. fig. 28.

Stimpson, Crust. and Echin. of Pacific Shores of N. Amer., Journ. Bost. Soc. Nat. Hist. vi. 1857.

With small spines on the dorsal portion of the third, fourth, fifth and sixth segments of the pleon. Eyes very small. Superior antennæ longer than the inferior; flagellum longer than the peduncle. Gnathopoda subequal: first pair a little the larger; propodos ovate, palm straight, slightly oblique; second pair ovate, palm slightly concave. Posterior pair of pleopoda longer than the preceding; rami subequal, lanceolate.

Length half an inch.

Hab. Sitka Isle, Russian America (*Middendorff* and *Wosnessenski*).

The description and figure are taken from a specimen in the Museum of the Jardin des Plantes, sent by Professor Brandt.

9. **Gammarus Verreauxii.** (Plate XXXVII. fig. 5.)

Gammarus Verreauxii, *Edwards, Ann. des Sc. Nat.*

Having a sinus on the centre of the dorsal surface of the fourth segment of the pleon. Eyes ovate. Superior antennæ about one-fourth the length of the animal; flagellum not so long as the peduncle. Inferior antennæ not so long as the superior; peduncle not longer than the peduncle of the superior. Gnathopoda of the same form: second pair as large again as the first, having the propodos long-ovate, tapering; palm the entire length of the inferior margin, straight, superior margin slightly arcuate. Third pair of pereiopoda but slightly shorter than the fourth; basa of the last three pairs not much dilated. Penultimate pair of pleopoda considerably shorter than the preceding; ultimate a little longer than the antepenultimate, rami equal.

Length $1\frac{1}{2}$ inch.

Hab. New Holland (*M. Verreaux*).

The figure and description are taken from the specimen preserved in the Museum of the Jardin des Plantes.

10. **Gammarus fasciatus.** (Plate XXXVII. fig. 6.) B.M.

Gammarus fasciatus, *Say, Proc. Acad. Nat. Sci. Philad.* i. part 2.

Eyes round. Superior antennæ half as long as the animal; flagellum longer than the peduncle, not furnished with long hairs. Inferior antennæ shorter than the superior; peduncle reaching quite to

the extremity of the peduncle of the superior, furnished with long fine hairs. Gnathopoda subequal, furnished with a few stiff hairs: first pair having the propodos long-ovate; palm very oblique, slightly concave, not defined, armed near the centre with a single short, obtuse spine: second pair slightly larger than the first, having the propodos longer and broader, and the palm less oblique, but imperfectly defined. Pereiopoda furnished posteriorly with long fine hairs, independent of the short spines; third pair of pereiopoda shorter than the two posterior. Posterior pair of pleopoda having the rami subequal and longer than the preceding.

Length $\frac{9}{20}$ths of an inch.

Hab. Common in the larger streams round Philadelphia (*Say* and *Stimpson*).

The figure is from a specimen presented by Professor Say to the British Museum. The description is also taken from that specimen, and from one preserved in spirits, sent to me by Mr. Stimpson. In both, the eyes are round (not reniform, as stated by Say). The second pair of gnathopoda, in the specimen presented by Say, differ from the description in the text in being somewhat truncate; but as the general appearance is that of a defective organ, I have adhered to Stimpson's specimen as being the more perfect. Say describes the species as being fasciated with faint green, and the appendages as similarly spotted.

11. **Gammarus multifasciatus.** (Plate XXXVII. fig. 7.) B.M.

Gammarus multifasciatus, *Stimpson, MS.*

Eyes reniform. Superior antennæ having the first joint of the peduncle stouter and longer than the others; peduncle of the inferior antennæ not longer than that of the superior. Gnathopoda small and of the same form: second pair slightly the larger; propodos subovate; palm convex, slightly oblique. First two pairs of pereiopoda clean; the last three thickly covered with fasciculi of spines. Posterior pair of pleopoda having the rami short, obtuse, and thickly furnished with hairs. Telson long, each division tipped with one long and three short obtuse spines, and furnished on the outer side with one and on the inner side with two obtuse spines subapically tipped with a single cilium.

Length $\frac{1}{20}$ths of an inch.

Hab. Grand Manan (*Stimpson*).

I am indebted to Mr. Stimpson for the specimen of this species from which the description and figure are taken.

12. **Gammarus ornatus.** (Plate XXXVII. fig. 8.) B.M.

Gammarus ornatus, *Edwards, Ann. des Sc. Nat.* xx. p. 372. pl. 10. f. 1; *Hist. des Crust.* iii. p. 47.
Gammarus fucicolus, *Stimpson, MS.*
Gammarus ? Pulex, *Stimpson, Marine Invert. Grand Manan*, p. 55.
Gammarus ? Locusta, *Gould, Invert. Mass.* p. 334.

Eyes long, reniform. Superior antennæ having the first joint of the peduncle longer than the second, the second longer than the third; flagellum longer than the peduncle. Inferior antennæ having the peduncle longer than the peduncle of the superior; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda having the propodos long-ovate, not broader than the carpus; palm oblique, concave, armed with a long and a short blunt spine, and defined by an angle furnished with two or three short obtuse spines. Second pair of gnathopoda having the inferior margin rounded; palm oblique, convex, marginate*, armed with a central short, blunt spine, and defined by two or three similar ones. Basa of the three posterior pairs of pereiopoda but slightly dilated. Posterior pair of pleopoda very much longer than the preceding; rami subequal, lanceolate.

Length of male $1\frac{1}{4}$ inch, of female $\frac{3}{4}$ of an inch.

Hab. Boston (*M. Lesueur*); Massachusetts (*Stimpson*); Arctic America (*MS. B.M.*).

I am indebted to Mr. Stimpson for several specimens of this species, which I believe is synonymous with *Gammarus Pulex* of Stimpson and *G. Locusta* of Gould. Some *Gammari* in the Collection of the Museum of the Royal College of Surgeons, of which the habitat is not mentioned, also appear to belong to this species,—the only difference consisting in the shorter length of the rami of the posterior pair of pleopoda. The type from which the figure is drawn is preserved in the Museum of the Jardin des Plantes.

13. **Gammarus Redmanni.** (Plate XXXVII. fig. 9.)

Gammarus Redmanni, *Leach, MS. B.M.*
Gammarus ornatus, *White, Cat. Crust. B.M.* 1847 (not *Edwards*).

This species resembles *Gammarus ornatus*, but microscopic observation of the gnathopoda exhibits a distinction. The first pair of gnathopoda have the propodos ovate; palm oblique, waving, marginate, armed near the centre with a short obtuse spine and a fasciculus of hairs, and defined by several blunt spines, margination convex, perpendicularly finely striated. The second pair of gna-

* The term "marginate" refers to a peculiar margin or thin cutting edge that is found on the palm in some species, the form and appearance of which are liable to variation. It will be best understood by a reference to the Plate.

thopoda differ from the first in having the propodos larger, and the palm less oblique and straight.

Length $\frac{14}{20}$ths of an inch.

Hab. Jamaica (*Lieut. Redman*).

14. Gammarus Boreus. (Plate XXXVII. fig. 10.) B.M.

Gammarus Boreus, *Sabine, Suppl. to Parry's First Voyage*, p. ccxxix.
Ross, App. to Parry's Third Voyage, p. 119; *Polar Voyage*, p. 204; *Second Voyage, Suppl.* p. 88.
White, Cat. Crust. B. M. 1847.
Bell, App. to Belcher's Arctic Exped. p. 405.
Owen, Nat. Hist. Cat. Roy. Coll. Surg. MS., opposite p. 93.
Gammarus Pulex, *Degeer, Ins.* vii. p. 525. pl. 33. figs. 1, 2.
Gammarus glacialis, *Leach, MS., White, Cat. Crust. B. M.* 1847.
Gammarus Arcticus, *Leach, MS., White, Cat. Crust. B. M.* 1847.

This species closely resembles *Gammarus ornatus*, from which it appears to differ only in some minute details of the gnathopoda. The first pair have the propodos ovate, palm oblique. The second pair have the propodos broader; palm unarmed, furnished with a few cilia, less oblique, imperfectly defined by three short blunt spines; marginate, margination parallel with the palm, except near the base of the dactylos, where it is lobed, closely lined with vertical striæ.

Length 1 inch. A specimen in the Museum of the Royal College of Surgeons is $1\frac{6}{20}$ inch long.

Hab. Spitzbergen. Presented to the British Museum by the Admiralty. Baffin's Bay. "It is abundant along the shores of the north-east part of the American continent and its contiguous islands, but especially near the estuaries of rivers, seeming to prefer brackish to the salt water of the ocean."—*Ross.*

15. Gammarus Sundevallii. (Plate XXXVIII. fig. 1.)

Gammarus Sundevallii, *Rathke, Beiträge zur Fauna Norw. in Nov. Act. Leop.* 1843, p. 65. t. 3. f. 2.
Liljeborg, Öfvers. af Kongl. Vet. Akad. Forhandl. 1854, p. 454.
Bruzelius, Skand. Amph. Gamm. p. 57.

"*Male.*—Cephalon without a rostrum. Spines on the fourth and fifth segments of the pleon. Eyes round. Inferior antennæ longer than the superior; first joint of the peduncle possessing a short acute process*. Second pair of gnathopoda larger than the first, oblong-ovate, pilose. Ultimate pair of pleopoda reaching beyond the penultimate; rami nearly equal, flattened, lanceolate. Telson double, subovate, posteriorly spinose."—*Rathke.*

"*Female.*—Differs from the male in having the gnathopoda nearly

* Olfactory organ?—*C. S. B.*

equal, and in the second pair having the dactylos pilose and little dentated."—*Liljeborg*.

"Length $3\frac{1}{2}$ lines."—*Rathke*.

Hab. "Molde" (*Rathke* and *Bruzelius*). "Eastern shores of Norway" (*Liljeborg*).

16. Gammarus assimilis.

Gammarus assimilis, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1851, p. 23; 1854, p. 455.
Bruzelius, Skand. Amph. Gamm. p. 59.

"Resembles *G. Sundevallii*. Differs principally in having the second pair of gnathopoda in the male longer than the first; propodos elongate, nearly rectangular."

Length $3\frac{1}{2}$ lines (?).

"*Hab.* Eastern shores of Norway."—*Liljeborg*.

17. Gammarus tenuimanus, n. s. (Plate XXXVIII. fig. 2.) B.M.

Eyes ovate. Superior antennæ half as long as the animal. Inferior antennæ having the peduncle slightly longer than the peduncle of the superior. Gnathopoda subequal and of the same form, each having the carpus longer than the propodos, and thickly studded with hairs along the inferior margin; the propodos not broader than the carpus, having the inferior margin parallel with the superior, and the palm very short; superior margin carrying four fasciculi of hairs, and the inferior margin thickly studded with hairs. Pereiopoda spinous. Posterior pairs of pleopoda (wanting).

Length $\frac{12}{20}$ths of an inch.

Hab. Taken at the entrance to the rivers Ness and Brauly, in Scotland (*Rev. G. Gordon*).

18. Gammarus Caspius. (Plate XXXVIII. fig. 3.)

Gammarus Caspius, *Brandt, Middendorff's Sibirische Reise.*

A fasciculus of spines upon a tubercle near the dorsal centre of the fourth and fifth segments of the pleon. Eyes small, oval. Superior antennæ not so long as the inferior. Inferior antennæ inserted posteriorly to the superior, having the peduncle reaching considerably beyond the extremity of the peduncle of the superior. Gnathopoda subequal: second pair somewhat the larger; carpus continuous with the propodos, forming together a long oval; palm oblique, not defined. Basa of the three posterior pairs of pereiopoda serrated. Posterior pair of pleopoda (wanting).

Length $\frac{16}{20}$ths of an inch.

Hab. Asiatic Russia? (*Middendorff*).

This description, together with the figure, is taken from a specimen presented to the Museum of the Jardin des Plantes by Professor Brandt.

19. **Gammarus marinus.** (Plate XXXVIII. fig. 4.) B.M.

Gammarus marinus, *Leach, Linn. Trans.* xi. p. 352 (not *M.-Edwards*).
Desmarest, Consid. sur les Crust. p. 267.
Gammarus Olivii, *Edwards, Ann. des Sc. Nat.* xx. p. 369. pl. 10. f. 9, 10, 1830; *Hist. des Crust.* iii. p. 47.
Gammarus gracilis, *Rathke, Fauna der Krym*, t. 5. f. 7–10, 1837.
Spence Bate, Brit. Assoc. Report, 1855; *Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 184.
Gammarus affinis, *Edwards, Hist. des Crust.* iii. p. 47, 1840.
Gammarus pœcilurus, *Rathke, Beitr. zur Faun. Norwegens, Nov. Act. Acad. Leop.* 1843, p. 68. t. 1. f. 2.
Gammarus Kröyeri, *Rathke, Beitr. zur Faun. Norwegens, Nov. Act. Acad. Leop.* 1843, p. 69. t. 4. f. 1.
Gammarus pœcilurus et Kröyeri, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Forhandl.* 1854, p. 450.
Bruzelius, Skand. Amph. Gamm. p. 54.

Postero-inferior angle of the three anterior segments of the pleon rounded. Eyes reniform. Superior antennæ nearly half as long as the animal; peduncle about half as long as the flagellum; secondary appendage triarticulate. Inferior antennæ about half the length of the superior; peduncle rather longer than the flagellum. Gnathopoda subequal: propodos of the first pair long-ovate, palm oblique, defined by a single spine; propodos of the second pair ovate, palm scarcely oblique, emarginate (both pairs are slightly smaller in the female). Posterior pair of pleopoda much longer than the preceding, having one ramus long and spinous, the other very short and spinous. Telson carrying, at the extremity of each section, two or three short spines and a single short plumose hair. The colour of the animal is olive-green, but occasionally one may be found of a greenish-yellow. Under the microscope the integument is seen to be studded all over with short straight hairs, that spring from a tube enlarged at each extremity.

Length $\frac{1}{2}$ an inch.

Hab. Southern coast of Devon (*Leach*); Plymouth, very abundant (*C. S. B.*); River Ban, Kilrea, Strangford Loch, and Loch Neagh, Ireland(?) (*Mr. W. Thompson*); Coast of Naples, very abundant (*M.-Edwards*); Coast of Manche (*Prince de Musignano* and *M.-Edwards*); Christiansund, Molde, Drontheim, and Namoen Fiord, and Nitika and at Cape Parthenon in the Crimea, very abundant (*Rathke*); Eastern coast of Sweden (*Liljeborg*); and probably all round Europe, under sea-weed, at about half-tide.

This species exists generally in a band round the coast somewhat nearer the shore than *G. Locusta*. I have frequently taken it with quantities of a species of *Vorticella* attached to the three anterior pairs of pleopoda.

Rathke's descriptions of *G. pœcilurus* and *G. Kröyeri* agree precisely with Milne-Edwards's description of *G. Olivii*; but, in his figures, the palm is drawn as serrated in *G. pœcilurus*, but not in *G. Kröyeri*: this character not being noticed in the text by Rathke, and Liljeborg and Bruzelius having united *G. Kröyeri* with *G. pœcilurus*, induce me to believe that the serrated character of the palm in *pœcilurus* is an error of the artist.

20. **Gammarus Ochotensis.** (Plate XXXVIII. fig. 5.)

Gammarus Ochotensis, *Brandt, Sibirische Reise, Zool.* i. pl. 6. f. 31.

First three segments of the pleon having several small spines on the posterior dorsal portion; fourth having an upright longitudinal plate crowned with small spines on each side of the central dorsal line; fifth and sixth crowned with spines. Eyes small, ovate. Superior antennæ longer than the inferior. Inferior antennæ having the peduncle longer than the peduncle of the superior. Gnathopoda subequal; propoda ovate, palmæ oblique. Third pair of perciopoda shorter than the second and fourth. Posterior pair of pleopoda long, rami unequal; inner ramus rudimentary, outer very long, and furnished with short hairs.

Length 1 inch.

Hab. Ochotsk Bay (*Middendorff*).

21. **Gammarus Arcticus.** (Plate XXXVIII. fig. 6.) B.M.

Gammarus arcticus (young), *Leach, MS., White, Cat. Crust. B. M.* 1847.

Eyes round, small. Superior antennæ about half the length of the animal; flagellum rather longer than the peduncle; secondary appendage uniarticulate. Gnathopoda short, robust: first pair rather stouter than the second; carpus as long as the propodos; propodos subovate, palm imperfectly defined by two short spines, marginate, margination narrowing towards the inferior angle, the edge notched at short distances: second pair having the propodos longer than the carpus, long-ovate; palm not oblique, rounded at the inferior angle, and imperfectly defined; dactylos shorter than the palm. Posterior pair of pleopoda having the rami unequal, the inner ramus being scarcely half the length of the outer.

Length $\frac{4}{20}$ths of an inch.

Hab. Baffin's Bay.

22. Gammarus pungens*.

Gammarus pungens, *Edwards, Hist. des Crust.* iii. p. 47.

"Closely resembles *G. marinus*. Having the inner ramus of the posterior pair of pleopoda almost rudimentary, and the outer one large and hairy."

Hab. Warm springs of Mount Cassini in Italy.

23. Gammarus Atchensis. (Plate XXXVIII. fig. 7.)

Gammarus Atchensis, *Brandt, Sibirische Reise*, pl. 6. f. 29.

Cephalon and pereion smooth. Pleon dorsally covered with short spines; first segment having a single row near the posterior margin; second having two rows; third having one row along the posterior margin, and, anteriorly to it, two diagonal rows on each side; fourth having two diagonal rows on each side; fifth having one diagonal row on each side; sixth not having any spines. Superior pair of antennæ shorter than the inferior; flagellum not longer than the peduncle; secondary appendage about half the length of the primary. Gnathopoda subequal and of the same form; in each the carpus is nearly as long as the propodos; propodos half as long again as broad, palm straight, excavate near the base of the dactylos, inferior angle rounded, unarmed; dactylos short, robust. Basa of the three posterior pairs of pereiopoda round. Penultimate pair of pleopoda shorter than the preceding; posterior pair reaching but a short distance beyond the preceding, rami unequal, the outer being broad and fringed with cilia, the inner very small. Telson unarmed.

Length nearly $\frac{3}{4}$ of an inch.

Hab. Isle of Atcha.

The description, as also the figure, are taken from a specimen in the collection sent by Prof. Brandt to the Jardin des Plantes.

24. Gammarus Maackii. (Plate XXXVIII. fig. 8.)

Gammarus Maackii, *Brandt, Middendorff's Sibirische Reise.*

Pleon having the dorsal surface near the posterior extremity of each segment armed with a few short strong spines. Eyes reniform. Antennæ subequal, one-third the length of the animal, having the flagella half the length of the peduncles; secondary appendage of the superior pair more than half the length of the primary. Gnathopoda somewhat alike in form, but unequal in size; second pair larger than the first, having the propodos ovate, palm oblique,

* This species appears closely to resemble a *Niphargus*.—*C. S. B.*

convex, not defined. Fifth pair of pleopoda shorter than the fourth; sixth having one ramus considerably longer than the other, very minute.

Length $\frac{13}{20}$ths of an inch.

Hab. Asiatic Russia.

25. **Gammarus confervicolus.** (Plate XXXVIII. fig. 9.) B.M.

Gammarus confervicolus, *Stimpson, Journ. Bost. Soc. Nat. Hist.* vi.
Mœra confervicola, *Stimpson, Proc. Calif. Acad. Nat. Sci.* i. 90.

Fasciculi of spines upon the three posterior segments of the pleon. Eyes reniform, black. Antennæ subequal, nearly half the length of the animal. Gnathopoda subequal; first pair having the palm slightly more oblique than that of the second, and armed with a greater number of short obtuse-pointed spines, each carrying a subapical cilium. Pereiopoda subequal. Posterior pair of pleopoda having the outer ramus considerably longer than the inner.

Length $\frac{6}{20}$ths of an inch.

Hab. "Among Confervæ in salt marshes near San Francisco. A few specimens were found in the stomach of a salmon taken in Puget Sound."—*Stimpson.*

I am indebted to Mr. Stimpson for the specimen from which I have taken the accompanying figure and description.

26. **Gammarus locustoides.** (Plate XXXVIII. fig. 10.) B.M.

Gammarus locustoides, *Brandt, Sibirische Reise, Zool.* i. pl. 6. f. 30.
Stimpson, Proc. Acad. Nat. Sci. Philad. 1855.

Postero-inferior angle of the third segment of the pleon forming a right angle. Eyes reniform, black. Superior antennæ not quite so long as the inferior; inferior antennæ having the peduncle longer than the peduncle of the superior. Gnathopoda subequal: first pair having the propodos ovate, palm slightly oblique, not defined, armed with eight or nine short obtuse-pointed spines; second pair having the propodos long-quadrate, palm not oblique, imperfectly defined, armed with six or seven short obtuse-pointed spines, each spine subapically tipped with a cilium. Pereiopoda subequal. Posterior pair of pleopoda having one long and one short ramus.

Length $\frac{16}{20}$ths of an inch.

Hab. Japan (*Stimpson*).

The description and figure are taken from a specimen sent me by Mr. Stimpson.

27. Gammarus verrucosus. *(Plate XXXIX. fig. 1.)

Gammarus verrucosus, *Brandt, Middendorff's Sibirische Reise**.

Pleon having the dorsal surface thickly covered with short spinous hairs; infero-posterior angle of the third segment produced into a long upturned tooth. Eyes reniform. Superior antennæ having the peduncle longer than the peduncle of the inferior; flagellum (wanting). Inferior antennæ having the inferior margin thickly ciliated: the last two joints of the peduncle subequal; flagellum scarcely longer than the peduncle. First pair of gnathopoda moderately large, having the carpus continuous with the propodos; propodos tapering, palm oblique, composing the whole length of the inferior margin, fringed with short spinous cilia. Second pair of gnathopoda a little the larger, but resembling the first in form. Perciopoda subequal. Posterior pair of pleopoda (wanting). Telson double, tipped with short spinous cilia.

Length 1 inch.

Hab. Asiatic Russia?

The figure and description are taken from a specimen presented to the Museum of the Jardin des Plantes by Professor Brandt.

28. Gammarus Peloponnesius. (Plate XXXIX. fig. 2.)

Gammarus peloponnesius, *Guérin-Méneville, Expéd. Sc. Morée, Zool.* sect. 2. p. 45. pl. 27. f. 5.
Edwards, Hist. des Crust. iii. p. 48.

Eyes reniform. Superior antennæ nearly one-third the length of the animal; flagellum about the length of the peduncle. Inferior antennæ much longer than the superior; peduncle nearly as long as the superior antennæ; flagellum as long as the peduncle. Gnathopoda subequal, alike: second pair a little the larger; propodos broad-ovate, palm imperfectly defined. Posterior pair of pleopoda scarcely reaching beyond the preceding.

Length 1 inch.

Hab. Grecian Archipelago (*Guérin-Méneville*).

The shortness of the superior antennæ in relation to the inferior pair, together with the size of the gnathopoda, suggest a doubt as to this species being a true *Gammarus*; but having seen only the figure in M. Guérin-Méneville's great work (from which the one in this is taken), I am induced to follow Milne-Edwards, who has arranged it among those species which possess fasciculi of spines upon the dorsal portion of the fourth and fifth segments of the pleon.

* I am indebted to the kindness of Prof. M.-Edwards for the use I have made of this work, but being unable to procure it in England, my quotations are not so complete as I could have desired.

29. Gammarus Pugettensis. (Plate XXXIX. fig. 3.)

Gammarus Pugettensis, *Dana, U. S. Explor. Exped.* p. 957. pl. 66. f. 1. *Stimpson, Journ. Bost. Soc. Nat. Hist.* vi.

"Coxæ large, fifth much shorter than fourth. Fourth segment of pleon acute above. Superior antennæ much shorter and more slender than inferior; second joint of base shorter than first; flagellum nearly twenty-articulated, almost naked; secondary appendage short, five- to six-articulated. Inferior antennæ quite stout, not half as long as body; base long, nearly naked, last two joints subequal; flagellum a little longer than preceding joint, about ten-articulated, articuli not oblong. Gnathopoda rather small; propoda subequal, each being broad for its length, partly short-hirsute below, apex obliquely truncate, palm a little excavate, lower angle rounded; dactylos not longer than palm. Fourth and fifth pairs of pereiopoda subequal; setæ few, short. Posterior pair of pleopoda quite long, projecting much beyond the second; outer branch very stout and bearing some very short spinules, the inner more slender and pilose.

"Length of body 9 lines.

"*Hab.* Puget's Sound, Western America."—*Dana.*

30. Gammarus tenuicornis.

Gammarus tenuicornis, *Stimpson, Proc. Acad. Nat. Sci. Philad.* May and June 1855.

"Compressed. Posterior segments of the pleon with two or three short setæ on the dorsal surface. Superior antennæ as long as the body, with a 22-articulate flagellum; secondary appendage triarticulate. Eyes small, circular. Second pair of gnathopoda the larger. Fourth and fifth pairs of pleopoda having slender, smooth rami; posterior pair with the external ramus long, thick, styliform, setose, the internal one extremely minute. Telson of considerable length, curved, each division surmounted by a long spinule. Colour blackish olive.

"Length $\frac{1}{3}$rd of an inch.

"*Hab.* Loo Choo."—*Stimpson.*

31. Gammarus rubro-maculatus.

Gammarus rubro-maculatus, *Stimpson, Proc. Acad. Nat. Sci. Philad.* July 1855.

"Rather large: spotted with crimson above, white below. Eyes subovate. Superior antennæ half as long as the body; inferior ones much shorter and more slender. First pair of gnathopoda very small and weak; second pair large, compressed, and with a sharp spine at the middle of the lower edge, where the dactylos

terminates. Pleon exceeding the pereion in length, or at least equalling it (the appendages excluded). Last pair of pleopoda half as long as the pleon; their rami long and broad, equal, and spinulated along their edges.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Found on muddy bottoms in the circumlittoral zone, Port Jackson, Australia."—*Stimpson.*

32. Gammarus minus.

Gammarus minus, *Say, Journ. Acad. Nat. Sci. Philad.* i. p. 376.
Gould, Invertebrata of Massachusetts, p. 334.
Gammarus minimus, *White, Cat. Crust. B. M.* p. 88, 1847.

"Eyes reniform. Superior antennæ obviously longer than the inferior; flagellum with about twelve articulations; secondary appendage short, attaining the tip of the second articulation of the flagellum. Body whitish, with a few very pale lateral spots.

"Length $\frac{3}{20}$ths of an inch.

"*Hab.* In brooks, under stones."—*Say.* "Found in ditches and sluggish fresh water, adhering to sticks."—*Gould.* N. America.

33. Gammarus plumicornis.

Gammarus plumicornis, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 176.

"Antennæ subequal, shorter than the body: the inferior plumose, with the peduncle a little longer than the peduncle of the superior. Gnathopoda robust, subequal, having the propoda oblong-ovate. The posterior segment of the pleon dorsally furnished with fasciculi of spines. Posterior pair of pleopoda much exceeding the preceding, which are rather short.

"Length 6 lines.

"*Hab.* Naples."—*Costa.*

34. Gammarus obtusunguis.

Gammarus obtusunguis, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 176.

"Having the dorsal surface round, unarmed. Superior antennæ slender, much longer than the body, flagellum more than double the length of the peduncle; inferior reaching a little beyond half the length of the superior. Gnathopoda subequal, robust; propoda oblong; dactyla inferiorly serrated. Posterior pair of pleopoda not reaching beyond the preceding.

"Length 4 lines.

"*Hab.* Naples."—*Costa.*

35. Gammarus flabellifer.

Gammarus flabellifer, *Stimpson, Proc. Acad. Nat. Sci. Philad.* May and June 1855.

"Slender, smooth posteriorly. Eyes small, round, black. Superior antennæ half as long as the body; flagellum twenty-articulate; secondary appendage five-articulate. Gnathopoda having the propoda oblong-elliptic, with a fusiform area below surrounded by short setæ. Rami of posterior pair of pleopoda long, lamelliform, elliptical, equal, spreading like a fan.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Loo Choo."—*Stimpson.*

36. Gammarus bispinosus.

Gammarus bispinosus, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 176.

"Having the dorsal surface round. First two segments of the pleon posteriorly produced into a depressed spine (tooth?)*. Superior antennæ extending a little beyond the peduncle of the inferior; inferior antennæ reaching a little beyond the last joint of the peduncle. Gnathopoda robust, equal, having the propoda oblong-ovate, palm very oblique, delicately ciliated. Posterior pair of pleopoda longer than the preceding.

"Length $2\frac{1}{2}$ lines.

"*Hab.* Naples."—*Costa.*

37. Gammarus unguiserratus.

Gammarus unguiserratus, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 176.

"Having the dorsal surface smooth, unarmed. Last two segments of the pleon with two small filiform erect spinules. Antennæ slender, the superior being one-fourth shorter than the body: flagellum half as long again as the peduncle: inferior reaching a little beyond the peduncle of the superior. First pair of gnathopoda small, slender: second pair enlarged below, having the palm of the propodos very oblique: dactylos denticulate towards the base.

"Length 3 lines.

"*Hab.* Naples."—*Costa.*

* Throughout this Catalogue, the term "tooth" has been applied to a sharp point which is a process of the part to which it belongs, while that of "spine" has been given to one which articulates at the base, as suggested and used by Professor Kinahan.

Doubtful species.

38. Gammarus dubius.

Gammarus dubius, *Johnston, Zool. Journ.* iii. p. 178.

"Antennæ subequal, rather more than half the length of the body; first joint longer than the second or third. Eyes black, roundish. Gnathopoda subequal, not much dilated, sparingly ciliated. Pereiopoda spiny; spines not collected into fascicles, but distributed over the entire margins. Pleopoda long, with aciculate branches. Telson consisting of two rather long conical spinous processes, and above them two much smaller papillæ.

"Length 2 or 3 lines.

"*Hab.* Confervæ, in pools near Berwick."—*Johnston.*

39. Gammarus maculatus.

Gammarus maculatus, *Johnston, Zool. Journ.* iii.
(Not *Liljeborg.*)

"Eyes red, large, oblong, running backwards. Gnathopoda alike, with oval and monodactyle gnathopoda, hairy, and partially hairy on the inner margin.

"Length 6 lines.

"*Hab.* Sea-coast near Berwick; rare; among corallines dredged from deep water."—*Johnston.*

40. Gammarus appendiculatus.

Gammarus appendiculatus, *Say, Journ. Acad. Nat. Sci. Philad.* i. p. 377.
Edwards, Hist. des Crust. iii. p. 51.

"Caudal segments and three terminal segments of the body dentated on their posterior edges. Clypeus not extended beyond the frontal curve. Eyes moderate, oval, hardly extending above the inferior base of the superior antennæ. First pair of gnathopoda filiform; propodos dilated, having the dactylos on the middle of the tip, short, curved, acute. Second pair in *one* sex having one of the pair with the propodos very large, didactyle, nearly equal to one-half of the body, subovate, inferior edge rounded, superior one rectilinear, terminating at the base of the *thumb* in an obtuse angle; tip or palm of the hand tridentate, lower tooth very small; dactylos reflected nearly rectangularly; thumb grooved, groove forming an emargination at the outer tip for the reception of the tip of the dactylos (in the *other* sex the second pair of gnathopoda are monodactyle, longer than the first). First three segments of the pleon dentate at the three posterior tips above, with seven strong

prominent teeth, of which the dorsal one is shortest; two next segments armed at the tip with two prominent acute teeth.

"Length $\frac{3}{10}$ths of an inch.

"*Hab.* Georgia."—*Say.*

It is difficult, from the above description, to know to what genus this species belongs. Certainly it does not belong to *Gammarus*. It appears to be related to *Podocerus*.

41. Gammarus scissimanus.

Gammarus scissimanus, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 176.

"Having the dorsal surface smooth, unarmed. Superior antennæ one-fourth shorter than the body, flagellum scarcely shorter than the peduncle; inferior antennæ much shorter than the superior, flagellum a little longer than the last joint of the peduncle. First pair of gnathopoda small; second pair strong, having the propodos with the palm a little oblique, sinuous, obtusely denticulated, deeply cleft in the middle. Pleopoda terminating subequally.

"Length $2\frac{1}{2}$ lines.

"*Hab.* Naples."—*Costa.*

42. Gammarus punctatus.

Gammarus punctatus, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 176.

"Having the dorsal surface smooth, unarmed. Superior antennæ scarcely shorter than the body, flagellum nearly twice as long as the peduncle; inferior antennæ much shorter and more slender, with the peduncle a little shorter than the peduncle of the superior. Second pair of gnathopoda having the propodos large, elongated, with the palm punctato-striated externally, internally channelled for the reception of the strong dactylos; dactylos as long as the palm, having the margin frequently barbed.

"Length $3\frac{1}{2}$ lines.

"*Hab.* Naples."—*Costa.*

Costa says that it is nearly allied to *Gammarella brevicaudata*. It appears to me to be nearly allied to the genus *Melita*.

66. MEGAMŒRA.

Gammarus (Division *a a*), *Edwards, Hist. des Crust.* iii. p. 48.
Gammarus (Div. +2), *Liljeborg, Ofvers. Skand. Gamm.* 1854, p. 452.

Dorsal segments of the pleon without fasciculi of spines. Eyes round. Superior antennæ long; inferior about half the length of

the superior. Gnathopoda subchelate, the second pair being the larger. Posterior pair of pleopoda biramous. Telson double.

This genus is distinguished from *Maera* by the relative size of the second pair of gnathopoda, by the greater depth of the coxæ, and by the more compact form of the animal generally; and from *Gammarus* by the absence of the fasciculi of spines upon the dorsal surface of the caudal segments and the shortness of the inferior antennæ. It is included by most authors in the genus *Gammarus*, but distinguished as a group by itself.

1. **Megamœra dentata.** (Plate XXXIX. fig. 4.) B.M.

Gammarus dentatus, *Kröyer*, *Nat. Tidskr.* iv. p. 159.
Bruzelius, *Skand. Amph. Gamm.* p. 61.
Gammarus purpuratus, *Stimpson*, *Marine Invertebrata Grand Manan*, p. 55.

Pleon having the posterior margin of each segment serrated upon the dorsal surface. Eyes round, black. Superior antennæ longer than the body of the animal; first two joints of the peduncle subequal, third short; flagellum as long again as the peduncle; secondary appendage short. Inferior antennæ half as long as the superior; peduncle longer than the peduncle of the superior; flagellum as long as the last joint of the peduncle. First pair of gnathopoda small, having the carpus as long as the propodos: second pair larger than the first, having the carpus short and continuous with the propodos; propodos obliquely quadrate, rather longer than broad, inferior margin nearly parallel with the superior, thickly ciliated; palm slightly oblique, defined by a blunt tooth. Pereiopoda subequal. Posterior pair of pleopoda longer than the preceding, having one long and one rudimentary ramus. Telson double.

Length $\frac{18}{20}$ths of an inch.

Hab. Greenland, in 40 to 50 fathoms (*Holböll*).

"Taken off a sandy bottom, in 12 fathoms, off Cheney's Head, Grand Manan. It also occurs in deep water in Massachusetts Bay. The colour never varies, being a uniform dark purple."—*Stimpson*.

It is not without careful consideration that I have included *Gammarus purpuratus* of Stimpson in the present species. The description and figure in this Catalogue are taken from specimens presented to the British Museum by M. Holböll, from whom Kröyer also received the type. Those in the British Museum had no name attached, but they agree with Kröyer's description, which only differs from *G. purpuratus* in having teeth upon the posterior margin of the first segment of the pleon.

In several specimens that I have examined, the teeth upon the dorsal surface vary from strong processes to others which are rudimentary or obsolete. I therefore think we are justified in concluding that *G. purpuratus* differs from *G. dentatus* only in the former having the teeth upon the first segment rudimentary. The smaller size of the second pair of gnathopoda in *G. purpuratus* appears to be merely a sexual distinction.

2. **Megamœra serrata**, n. s. (Plate XXXIX. fig. 5.) B.M.

Pleon having the posterior dorsal margin of each segment posteriorly produced and serrated; the third segment having the infero-lateral posterior margin also serrated. Eyes small, round, black. Superior antennæ half the length of the animal; first joint of the peduncle longer than the cephalon, second longer than the first, third shorter than either. Inferior antennæ having the peduncle nearly as long as the peduncle of the superior. First pair of gnathopoda small; carpus as long as the propodos; propodos long-ovate, palm oblique, not defined. Second pair of gnathopoda much larger than the first, having the meros produced inferiorly to an acute angle; carpus short, continuous with the propodos; propodos long-ovate, palm oblique, defined by a small tooth; dactylos arcuate. Pereiopoda subequal. Posterior pair of pleopoda (wanting). Telson double.

Length $\frac{1}{2}\frac{8}{0}$ths of an inch.

Hab. Flinders's and Hummock Islands, Bass's Straits, in sea-weed on a sandy beach (*Mr. F. M. Rayner*).

3. **Megamœra semiserrata**, n. s. (Plate XXXIX. fig. 6.) B.M.

Body long and slender, having the infero-posterior margin of the third segment of the pleon serrated. Eyes narrow, reniform. Superior antennæ half as long as the animal; first and second joints of the peduncle longer than the third. Inferior antennæ not longer than the peduncle of the superior. Gnathopoda resembling each other in form; first pair about half the size of the second: second pair moderately large, having the carpus nearly as long as the propodos; propodos not broader than the carpus, long-ovate; palm oblique, slightly denticulated, and imperfectly defined; carpus and propodos fringed with fasciculi of hairs; dactylos short and curved. Coxæ of the gnathopoda, as well as those of the first two pairs of pereiopoda, furnished with a single tooth near the posterior extremity of the inferior margin. Last three pairs of pereiopoda slightly increasing in length posteriorly, and having the posterior

margin of the basa serrated. Posterior pair of pleopoda much longer than the preceding, and having the rami nearly equal. Telson double.

Length $\frac{1}{4}$ of an inch.

Hab. Plymouth Sound (*Prof. Kinahan* and *C. S. B.*).

4. **Megamœra longimanus.** (Plate XXXIX. fig. 7.) B.M.

Gammarus longimanus, *Leach, MS. B.M. Collection.*
Thompson, Ann. Nat. Hist. Oct. 1847; *Nat. Hist. of Ireland*, iv. p. 396.
Spence Bate, Brit. Assoc. Report, 1855; *Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 184.
Gosse, Mar. Zool. p. 141.
Gammarus lævis, *Bruzelius, Skand. Amph. Gamm.* p. 60. pl. 2. f. 10.

Animal long and slender; back smooth; second and third segments of the pleon having the inferior margin serrated. Eyes small, nearly round. Superior antennæ about half the length of the animal; first two joints of the peduncle long, subequal, third short; flagellum a little longer than the peduncle; secondary appendage having three or four articuli: peduncle of the inferior antennæ as long as the peduncle of the superior; flagellum scarcely longer than the last joint of the peduncle. First pair of gnathopoda having the carpus and propodos long, slender, subequal; propodos slightly tapering, palm not defined; dactylos short. Second pair of gnathopoda having the meros produced anteriorly forwards and downwards to a sharp tooth; the carpus produced anteriorly along the inferior margin of the propodos to a sharp tooth; propodos four times as long as, and not broader than, the carpus, having the superior and inferior margins parallel; palm slightly crenated anteriorly, not defined; dactylos almost as long as the propodos, suddenly curved nearly at right angles close to the base, then straight. Posterior margins of the basa of the three posterior pairs of pereiopoda serrated. Posterior pair of pleopoda having the rami long, lanceolate, clean. Telson long, double.

Length $\frac{11}{20}$ths of an inch.

Hab. Plymouth (*C. S. B.*); St. Michael's Mount (*Mr. Webster*); Belfast (*Thompson*); Dublin (*Kinahan*); Moray Frith (*Rev. G. Gordon*); Bohusia (*Bruzelius*).

5. **Megamœra Othonis.** (Plate XXXIX. fig. 8.) B.M.

Gammarus Othonis, *Edwards, Ann. des Sc. Nat.* xx. p. 373. pl. 10. f. 11: *Hist. des Crust.* iii. p. 50.
Spence Bate, Brit. Assoc. Report, 1855; *Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 184.

Third segment of the pleon having the infero-posterior and postero-

inferior margins serrated. Eyes round. Superior antennæ longer than the inferior; first and second joints of the peduncle long, subequal, third very short; flagellum as long as the peduncle; secondary appendage short, consisting of from two to three articuli. Inferior antennæ one-fourth the length of the animal; peduncle longer than the flagellum. Gnathopoda subequal and uniform; first pair rather the smaller, having the coxæ serrated along the inferior margin; carpus as long as the propodos; propodos long-ovate, tapering, palm oblique, not defined. Two anterior pairs of perciopoda having the inferior margin serrated; three posterior pairs subequal in length, having the basos in each ovate, with the posterior margin serrated. Posterior pair of pleopoda having the rami foliaceous, equal. Telson double, and serrated at the apex. The integument is rugose, being covered all over with short angular scales or flat spines, which are only visible with a microscope.

Length $\frac{1}{2}$ an inch.

Hab. Plymouth; trawled (*C. S. B.*); Polperro (*Mr. Loughrin*).

6. **Megamœra Alderi**, n. s. (Plate XL. fig. 1.) B.M.

Third and fifth segments of the pleon having the posterior dorsal margin produced into a tooth. Eyes round. Superior antennæ two-thirds the length of the animal; flagellum twice the length of the peduncle; secondary appendage consisting of three articuli. Inferior antennæ a little longer than the peduncle of the superior; peduncle as long as the peduncle of the superior. First pair of gnathopoda small, having the carpus a little longer than the propodos; propodos ovate, palm imperfectly defined; inferior margins of both carpus and propodos tufted with short hairs. Second pair of gnathopoda moderately long; propodos ovate, palm oblique, defined by a blunt tooth. Third pair of perciopoda shorter than the two posterior. Posterior pair of pleopoda (wanting).

Length $\frac{5}{20}$ths of an inch.

Hab. Coast of Northumberland (*Mr. Alder*).

7. **Megamœra brevicaudata.** (Plate XL. fig. 2.) B.M.

Gammarus brevicaudatus, *Spence Bate, Brit. Assoc. Report*, 1855; *Ann. Nat. Hist.* Feb. 1857 (not *Edwards*).
White, Hist. Brit. Crust. p. 185.

Superior antennæ one-fourth the length of the animal; peduncle three times as long as the flagellum. Inferior antennæ two-thirds the length of the superior; peduncle three times as long as the flagellum. First pair of gnathopoda small, having the propodos

ovate, palm convex and imperfectly defined; second pair much larger than the first, having the carpus short, the propodos long-ovate, palm oblique and defined by a small tubercle. Three posterior pairs of perciopoda subequal, having the basa oval, the mera produced distally both anteriorly and posteriorly, the carpi robust, the propoda increasing in diameter distally, the dactyla short. Posterior pair of pleopoda short, scarcely reaching beyond the penultimate; rami equal, very short, not longer than base. Telson double.

Length $\frac{6}{20}$ths of an inch.

Hab. Plymouth (*C. S. B.*); Moray Frith (*Rev. G. Gordon*).

This species was originally described under the impression that it was identical with *Gammarus brevicaudatus* of Edwards; but an examination of the type, preserved in the Museum of the Jardin des Plantes, has enabled me to correct the mistake.

8. **Megamœra longicauda.** (Plate XL. fig. 3.)

Gammarus longicauda, *Brandt, Middendorff's Sibirische Reise*, p. 141. pl. 6. f. 32.

Three anterior segments of the pleon having the posterior margins serrated, and the two succeeding segments denticulated upon the dorsal surface. Eyes round. Superior antennæ nearly as long again as the inferior, having the joints of the peduncle subequal; flagellum longer than the peduncle; secondary appendage scarcely as long as the last joint of the peduncle. Inferior antennæ longer than the peduncle of the superior; flagellum a little longer than the last joint of the peduncle. First pair of gnathopoda smaller than the second, having the carpus as long as the propodos; propodos ovate, palm oblique, not defined; dactylos short, arcuate. Second pair of gnathopoda having the carpus much shorter than the propodos; propodos ovate, palm oblique, imperfectly defined, ciliated; dactylos short, arcuate. Posterior pair of pleopoda long, having one long and one short ramus.

Hab. Asiatic Russia?

The animal, which is described from Brandt's figure in Count Middendorff's 'Sibirische Reise,' closely resembles, and may be identical with, *Gammarus dentatus* of Kröyer.

9. **Megamœra Kröyeri.** (Plate XL. fig. 4.)

Gammarus Kröyeri, *Bell, App. to Belcher's Last of the Arctic Voyages*, p. 405. pl. 34. f. 4 (*not* Gammarus Kröyeri, *Rathke*).

Pleon having a row of short spines on the posterior edge of the

dorsal surface of each segment. Eyes ovate, imperfect. Superior antennæ longer than the inferior; flagellum rather longer than the peduncle. Inferior antennæ having the peduncle as long as the peduncle of the superior. Gnathopoda of the same form: second pair larger than the first; propodos ovate, palm oblique, straight, fringed with cilia. Perciopoda long and slender. Posterior pair of pleopoda longer than the preceding, rami subequal. Telson having a solitary subapical spine upon the inner edge of each division.

Length $\frac{1}{20}$ths of an inch.

Hab. Wellington Channel, 35 fathoms (*Sir Edward Belcher*).

I have been enabled to describe this species through the kindness of Professor Bell, who entrusted me with the collection made by Sir Edward Belcher, and described by him in the Appendix to Belcher's 'Last of the Arctic Voyages.'

10. **Megamœra aspera.** (Plate XL. fig. 5.)

Gammarus asper, *Dana, U. S. Explor. Exped.* p. 945. pl. 65. f. 2.

"Body rather stout. Coxæ broad, the fifth slightly shorter than the fourth. Segments of the pleon unequally denticulate on the posterior margin. Eyes subrotund. Antennæ having the peduncles long, subequal, and the articuli of the flagella oblong, the setæ not shorter than the articuli: superior pair with the first joint of the peduncle quite stout, the second slender, nearly twice as long as the first, the third much shorter; secondary appendage three-jointed. Inferior antennæ about half as long as the body; peduncle very slender, the last two joints subequal; flagellum a little shorter than the peduncle. First pair of gnathopoda very small; propodos minute, oblong, attenuate: second pair more than twice the length of the first, densely hirsute below; propodos oblong, margins nearly parallel, palm very oblique; dactylos half the length of the propodos; carpus shorter than the propodos.

"Length 6 lines.

"Dredged up in 6½ fathoms, Sooloo Archipelago, February 2, 1842."—*Dana.*

11. **Megamœra Suluensis.** (Plate XL. fig. 6.)

Gammarus Suluensis, *Dana, U. S. Explor. Exped.* p. 947. pl. 65. f. 3.

"Body rather stout. First and second segments of the pleon having the posterior margin on the back two- to three-dentate, fourth also two-acute [dentate?]. Eyes subrotund. Superior antennæ as long as the body; flagellum longer than the peduncle, its articuli oblong, the setæ as long as the articuli: secondary append-

age very short, three-articulated. Inferior antennæ nearly half shorter than the superior; flagellum not half as long as the peduncle; peduncle hardly as long as the peduncle of the superior pair. Gnathopoda subequal, small; first pair the smaller; propoda little oblong, straight, truncate at apex, below very short, pubescent: margins of propodos of second pair nearly parallel; dactylos very small. Three posterior pairs of pereiopoda a little unequal; setæ few, remote, rather long at the base of the dactylos.

"Length 4–5 lines.

"*Hab.* Sooloo Sea, from a small island off the harbour of Soung, among sea-weed floating off the shore."—*Dana.*

12. **Megamœra albida.** (Plate XL. fig. 7.)

Gammarus albidus, *Dana, U. S. Explor. Exped.* p. 948. pl. 65. f. 4.

"*Female.*—Coxæ moderately large. A small spine or two on the back of the first, second, and fourth segments of the pleon. Superior antennæ nearly three-fourths the length of the body; peduncle shorter than flagellum, second joint a little the longest; flagellum about twenty-one-articulated. Inferior antennæ very slender, nearly half shorter than the superior; flagellum shorter than base, about eight-articulated. Gnathopoda subequal; propoda quite small, oblong, apex somewhat rounded, rather densely hirsute below and also on carpus: the second pair a little the longer; dactylos small. Posterior pair of pereiopoda subequal; setæ numerous, rather longer than the diameter of the propodos.

"*Male.*—Second pair of gnathopoda stout; propodos large, oblong, narrower at base, the margins nearly parallel, lower margin with a few very short setæ, apex obliquely truncate, forming the palm; palm a little excavate, and defined below by an angle; dactylos half as long as the propodos.

"Length 5 lines.

"*Hab.* Tongataba, in shallow waters of the lagoon, among sea-weed."—*Dana.*

13. **Megamœra Peruviensis.** (Plate XL. fig. 8.)

Gammarus? Peruviensis, *Dana, U. S. Explor. Exped.* p. 958. pl. 66. fig. 2.

"Body compressed. Coxæ large, the fifth much shorter than the fourth. Superior antennæ little shorter than the body, nearly twice as long as the inferior pair; peduncle shorter than the flagellum, the three joints subequal, the second somewhat the longest, setæ short: inferior pair hardly longer than peduncle of superior:

peduncle longer than flagellum, fourth joint of peduncle longest. Propodos of first pair of gnathopoda small, slightly broader at apex, and oblique: propodos of second pair moderately large, subovate, base below sparsely setose, palm not excavate, dactylos rather short. Three posterior pairs of pereiopoda not long, slightly longer from the third to the fifth pair, setæ short, basa very broad. Penultimate pair of pleopoda hardly reaching as far as the first.

"Length 5–6 lines.

"*Hab.* Island of San Lorenzo, Peru, among sea-weed along the sea-shore."—*Dana.*

14. **Megamœra Indica.** (Plate XL. fig. 9.)

Gammarus? Indicus, *Dana, U. S. Explor. Exped.* p. 961. pl. 66. f. 4.

"*Female.*—Coxæ of moderate size. Fourth segment of pleon acute behind. Superior antennæ twice longer than the inferior, a little shorter than the body; peduncle shorter than the flagellum, firs joint the longest; setæ numerous, rather short. Inferior antennæ slender, but little longer than peduncle of superior pair, base hardly longer than flagellum. Propoda of first and second pairs of gnathopoda small, oblong, above nearly straight, narrowing to apex, hirsute below; dactylos of moderate length. First and second pairs of pereiopoda slender, hardly shorter than third; fourth and fifth subequal, longer than third; basa very broad; setæ short, excepting the apical, which are long. Posterior pleopoda hardly extending beyond penultimate pair.

"Length 4 lines.

"*Hab.* Shores of a small coral island in the Balabac Passage, north of Borneo. Collected February 1842."—*Dana.*

Subdivision DOMICOLA.

Pereion not compressed. Having either the lower antennæ subpediform and furnished with strong slightly-curved spines, or the posterior pair of pleopoda furnished with hook-like spines. They construct abodes in which to take shelter either by building or burrowing. They have the power of swimming, and, with but few exceptions, can walk erect. This subdivision represents Milne-Edwards's tribe of MARCHEURS.

Fam. 3. COROPHIIDÆ.

None of the segments of the pereion or pleon are obsolete or fused together. This family is synonymous with that of Dana. It consists of two sections, NIDIFICA and TUBIFICA.

Section NIDIFICA.

The animals which belong to this section of the family have the power of secreting either a substance that, like a web, binds together the materials of which the nest is composed, or one of a more membranous character.

Subfamily 1. PODOCERIDES.

Peduncle of the upper antennæ much shorter than the peduncle of the lower. Lower antennæ robust, and used in climbing. Posterior pair of pleopoda furnished with hook-like spines.

1. AMPHITHOË.

Amphithoë, *Leach, Edinb. Encyc.* vii. p. 402; *Linn. Trans.* xi. p. 361. *Dana, U. S. Explor. Exped.* p. 935.

Coxæ large, those pertaining to the third pair of pereiopoda having the anterior lobe not shorter than the preceding, posterior lobe very small. Second pair of gnathopoda larger than the first. Posterior pair of pleopoda supporting two rami, the outer ramus terminating in one or more short, slightly-curved spines, the inner subfoliaceous. Telson single, lamelliform.

1. **Amphithoë rubricata.** (PLATE XLI. fig. 1.) B.M.

Cancer (Gammarus) rubricatus, *Montagu, Linn. Trans.* ix. p. 99.
Gammarus rubricatus, *Leach, Edinb. Encyc.* vii. p. 402.
Amphithoë rubricata, *Leach, Edinb. Encyc. Append.* p. 432.
Edwards, Hist. des Crust. iii. p. 33.
Spence Bate, Report Brit. Assoc. 1855, p. 59.
White, Hist. Brit. Crust. p. 200.
Gosse, Marine Zool. i. p. 141. f. 258.

Eyes suborbicular, white, with black spots. Superior antennæ nearly

two-thirds the length of the animal; peduncle scarcely reaching beyond the extremity of the penultimate joint of the peduncle of the inferior pair; flagellum long and slender. Inferior antennæ not two-thirds the length of the superior; last two joints of the peduncle subequal, the last more slender; flagellum slender, scarcely longer than the last joint of the peduncle. Gnathopoda subequal, both pairs having the carpus nearly as long as, and continuous with, the propodos, together forming an imperfect oval; palm oblique, not defined, armed with a few hairs; dactylos about half the length of the inferior margin of the propodos. First two pairs of pereiopoda robust, basa slightly dilated; third pair having the basos disk-shaped, scarcely as long as the anterior squamiform dilatation of its coxa is deep; last three pairs having the propoda obliquely truncate, and furnished with two short, strong spines on the flexible margin. Posterior pair of pleopoda not extending beyond the two anterior pairs, having the inner ramus foliaceous, the outer terminating in two small hooks. Telson short, subtriangular.

Length $\frac{1}{2}$ an inch.

Hab. Devonshire coast (*Montagu*); Plymouth Sound (*C. S. B.*); Strangford Loch (*Thompson* and *Hyndman*, Ann. Nat. Hist. 1847).

The colour of the adult animal, to the unassisted eye, is of a bright crimson, spotted with a few large blotches of white; under the microscope, this colour is observed to be due to a thickly-stellate pigment covering a corneous ground. When young, the animal is wholly of this corneous hue, except a few white blotches; when the animal is somewhat grown, the same general colour prevails, but it is covered with numerous small spots of red, which, on close observation, are seen to possess a more or less stellate character, gradually increasing and ultimately spreading over the entire surface of the animal, until it appears of a uniform red.

This species generally builds its nest of small bits of weed, which it binds together by a series of thread-like fibres that it secretes. Its common resting-place is at the roots of Laminariæ, or in the crevices between stones, &c. at the bottom of the sea, in a few fathoms of water.

2. Amphithoë littorina. (Plate XLI. fig. 2.) B.M.

Amphithoë littorina, *Spence Bate, Brit. Assoc. Report*, 1855.
Amphithoë punctata, *Johnston, Ann. Nat. Hist.* xx. p. 243; *Zool. Journ.* iii. p. 177. (Not *Say.*)

Eyes small, ovate. Antennæ subequal: superior one-third the length of the animal; peduncle not so long as the flagellum, third joint shorter than the preceding: inferior having the peduncle longer than the flagellum. Gnathopoda uniform, subequal: second

pair rather the larger, having the carpus continuous with the propodos; propodos tapering, palm oblique, not defined, furnished with a few cilia; dactylos nearly as long as the inferior margin. First two pairs of pereiopoda short, robust; the three posterior having the internal margins of the propoda furnished with a row of equidistant, short, stout spines. Posterior pair of pleopoda not longer than the preceding, having the inner ramus foliaceous, the outer styliform and furnished with two short hook-like spines. Telson obtusely triangular. Colour green, covered with black spots. Length $\frac{14}{20}$ths of an inch.

Hab. Berwick (*Johnston*); Spring Vale, Co. Down (*Thompson*); Plymouth (*C. S. B.*); Skye (*Barlee*); Moray Frith (*Rev. G. Gordon*); Normandy (*Jeffreys*); Tenby (*Mr. Webster*). A species found at Hummock Island, Bass's Straits, by *Mr. Rayner*, appears to be identical with this.

3. Amphithoë pelagica. (Plate XLI. fig. 3.)

Amphithoë pelagica, *Edwards, Ann. des Sci. Nat.* xx. p. 378, & 2 sér. t. iii. pl. 14. f. 11; *Hist. des Crust.* iii. p. 36.
Goodsir, Ann. Nat. Hist. xv. p. 6.

Eyes round, moderately large. Superior antennæ two-thirds as long as the animal; peduncle short, scarcely longer than the cephalon, third joint small; flagellum nearly five times as long as the peduncle. Inferior antennæ scarcely half the length of the superior; peduncle extending beyond the peduncle of the superior by nearly the length of the last joint; flagellum but little longer than the last joint of the peduncle. First pair of gnathopoda very small: second very large, having the carpus short; propodos long-ovate, upper margin arcuate; palm very oblique, straight, continuous with the inferior margin, defined by a slight eminence; dactylos long, slender, arcuate. Posterior pair of pleopoda short. Telson small, round, inconspicuous.

Hab. Found by M. Reynaud in the Atlantic Ocean, lat. 28° N. (near the Canary Isles) (*Edwards*); Gulf weed, Atlantic Ocean (*Goodsir*).

Having compared Goodsir's figure with the type in the collection of the Jardin des Plantes, I have no doubt of their identity.

4. Amphithoë Gammaroides. (Plate XLI. fig. 4.)

Pleonexes Gammaroides, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 199.

Eyes round, small, black. Superior antennæ about half the length

of the animal; first joint of the peduncle as long as the cephalon, having the distal extremity abruptly truncate; second joint as long as the first, but narrower; third very short, scarcely more important than the first joint of the flagellum; flagellum about as long as the peduncle. Inferior antennæ about two-thirds as long as the animal; peduncle having the penultimate joint reaching nearly to the extremity of the penultimate joint of the peduncle of the superior, last joint of the peduncle nearly as long as the two preceding; flagellum rather longer than the last joint of the peduncle. First pair of gnathopoda having the propodos but slightly dilated, increasing in diameter towards the palm; palm oblique, smooth, imperfectly defined, against which the dactylos closely impinges. Second pair of gnathopoda having the carpus dilated, continuous with the propodos; propodos large, diagonally quadrate; palm oblique, defined by an obtuse angle. First two pairs of perciopoda having the basa dilated; last three pairs reversed, having the propoda dilated to an obtuse lobe at the posterior distal extremity.

Length $\frac{1}{4}$ of an inch.

Hab. Penzance (*Mr. Barlee*).

I had previously thought that the short upper antennæ would distinguish this species from the rest of the genus; but perceiving that the peduncle of the upper antennæ is generally shorter and never longer than that of the lower, the difference between them respectively consists only in the greater or less length of the flagellum of the upper organ—a fact of but secondary importance.

5. Amphithoë lacertosa. (Plate XLI. fig. 5.)

Amphithoë lacertosa, *Spence Bate, Ann. Nat. Hist.* 3rd ser. i. p. 362.

Eyes ovate. Superior antennæ about half the length of the animal; flagellum a little longer than the peduncle. Inferior antennæ a little shorter than the superior; peduncle not longer than the peduncle of the superior. First pair of gnathopoda having the coxæ extending as far forwards as the anterior margin of the cephalon; carpus longer than the propodos, slightly dilated; propodos not broader than the carpus, ovate; palm oblique, not defined; dactylos short. Second pair of gnathopoda much larger than the first, having the carpus small, inferiorly produced; propodos large, quadrate, inferior angle produced, so as almost, with the dactylos, to form a chelate organ; palm concave, serrated; dactylos long, arcuate, interior and exterior margins parallel. First two pairs of perciopoda subequal, third scarcely longer than the second, fourth

and fifth much longer, all having the dilated basa tapering to the distal extremity. Antepenultimate and penultimate pairs of pleopoda uniform, having a few equidistant obtuse spines upon the upper margin and extremity of each ramus; posterior pair reaching beyond the preceding, having two short blunt spines upon the upper margin of the base, and a row of five or six on the upper margin of the distal extremity; outer ramus terminating in two strong hooks; the inner ramus styliform, armed upon the upper side with a few short blunt spines, and tipped with some fine hairs. Telson acute.

Length $\frac{17}{20}$ths of an inch.

Hab. Arctic Seas.

This specimen belongs to the Hunterian Museum of the College of Surgeons, and was kindly lent to me for examination by the Council.

6. **Amphithoë Falklandi**, n. s. (Plate XLI. fig. 6.) B.M.

Female.—Eyes round. Superior antennæ half the length of the animal: third joint of the peduncle longer than the preceding; flagellum longer than the peduncle, slender, having each articulus four times as long as broad. Inferior antennæ two-thirds as long as the superior, having the peduncle longer than the peduncle of the superior; flagellum longer than the last joint of the peduncle, having each articulus a little longer than broad. Gnathopoda uniform, each pair having the upper margin of the carpus arcuate, the inferior produced to an obtuse point; propodos long-quadrate, superior and inferior margins nearly parallel; palm straight, defined by a right angle furnished with a few hairs; dactylos longer than the palm, nearly straight. First two pairs of perciopoda subequal, having the basa and the mera dilated, and the distal extremity of the latter anteriorly produced; third pair shorter than the preceding, having the dactylos short, straight, and reversed; last two pairs subequal, considerably longer than the third pair, having their dactyla long, arcuate, and directed anteriorly. Posterior pair of pleopoda reaching beyond the preceding, having the inner ramus foliaceous, the outer terminating with two short, strong hooks.

Length $\frac{1}{4}$ of an inch.

Hab. Falkland Islands (*Mr. W. E. Wright*).

7. **Amphithoë Australiensis**, n. s. (Plate XLI. fig. 7.) B.M.

Eyes small, oblong, oblique. Superior antennæ one-third the length of the animal; peduncle having the first joint as long as the

cephalon, second as long as the first, third but slightly shorter than the second; flagellum scarcely longer than the last joint of the peduncle. Inferior antennæ longer than the superior; peduncle scarcely shorter than the superior antennæ, having the penultimate joint longer than the ultimate; flagellum a little longer than the last joint of the peduncle. Gnathopoda subequal: first pair having the propodos ovate, palm oblique, imperfectly defined by a lateral obtuse spine and armed with a few hairs: dactylos long, internally serrated: second pair having the propodos ovate, palm convex, oblique, imperfectly defined by a sharp lateral spine and armed with short cilia; dactylos arcuate, internally serrated. Third pair of pereiopoda short, fourth and fifth longer than the third. Antepenultimate and penultimate pairs of pleopoda with a strong sharp spine upon the inferior distal extremity of the base; posterior pair having the base short, not longer than the rami, rami not reaching beyond the extremity of the preceding pair; inner ramus subfoliaceous, tipped with a small tooth or blunt spine; outer terminating in two hooks.

Length $\frac{1}{2}$ an inch.

Hab. South Australia.

The colour of the animal, as well as can be ascertained by examination of a dried specimen, appears to have been green, spotted all over with small black, irregular blotches, which are thickest along the dorsal surface, but gradually decreasing, until they disappear from the lower margins of the coxæ.

8. **Amphithoë Desmarestii**, n. s. (Plate XLI. fig. 8.) B.M.

Eyes ovate. Superior antennæ half as long as the animal, having the flagellum clean, slender, longer than the peduncle, each articulus increasing in diameter towards the distal extremity, where it is about one-third as broad as long. Inferior antennæ a little shorter than the superior, hispid; peduncle a little longer than the peduncle of the superior; flagellum as long as the last two joints of the peduncle. Gnathopoda subequal: first pair having only the inferior margin fringed with hair; meros inferiorly produced to a tubercle anteriorly directed; carpus having the upper margin broken by an indentation, from which springs a short sharp spine, and having the infero-anterior extremity slightly produced; propodos long-ovate, as long again as broad; palm oblique, imperfectly defined by a lateral spine; dactylos almost straight, inner margin serrated: second pair having the propodos ovate, the upper margin furnished with four or five fasciculi of

hairs; palm oblique, deeply concave, defined by one or two short spines. Third pair of pereiopoda shorter than the preceding, dactylos anteriorly directed; last two pairs subequal, considerably longer than the third. Posterior pair of pleopoda scarcely reaching beyond the extremity of the preceding; inner ramus foliaceous, tipped with a strong straight spine; outer shorter than the inner, and terminating in two strong hooks. Telson short, obtuse, having four hairs on the broad apex, and three in a depression on each side.

Length $\frac{8}{20}$ths of an inch.

Hab. Marseilles.

9. Amphithoë Raymondi. (Plate XLII. fig. 1.)

Amphithoë Raymondi, *Savigny, Egypte, Crust.* pl. 11. f. 5.
Edwards, Hist. des Crust. iii. p. 32.

Eyes oblong-ovate, horizontal. Superior antennæ as long as the animal, having the first joint of the peduncle as long as the cephalon; second a little longer than the first; third short, scarcely more important than the first articulus of the flagellum; flagellum four times as long as the peduncle. Inferior antennæ having the peduncle reaching a little beyond the peduncle of the superior; flagellum scarcely longer than the peduncle. First pair of gnathopoda having the propodos ovate, tapering, palm acute; dactylos slender. Second pair of gnathopoda like the first. Third pair of pereiopoda shorter than the preceding, fourth and fifth longer than the third. Posterior pair of pleopoda reaching a little beyond the preceding, rami short. Telson acute.

Hab. Egypt (*Savigny*).

10. Amphithoë filosa. (Plate XLII. fig. 2.)

Cymadusa filosa, *Savigny, Egypte, Crust.* pl. 11. f. 4.
Amphitoë filosa, *Edwards, Ann. des Sci. Nat.* xx. p. 377; *Hist. des Crust.* iii. p. 32.
Guérin-Méneville, Iconogr. Crust. pl. 26. f. 9.

Male.—Superior antennæ longer than the animal; flagellum four times as long as the peduncle. Inferior antennæ about one-third shorter than the superior; peduncle extending beyond the extremity of the peduncle of the superior. Gnathopoda subequal: first pair having the carpus as long as the propodos; propodos as long again as broad, palm straight, oblique; dactylos as long as the palm: second pair like the first, but a little larger. First two pairs of pereiopoda subequal; third shorter than the second, having

the dactylos reversed; fourth and fifth much longer than the third. Posterior pair of pleopoda reaching scarcely beyond the extremity of the preceding; rami short.

Female.—Superior antennæ scarcely longer than the inferior.

Hab. Egypt (*Savigny*).

11. Amphithoë elongata.

Amphitoë elongata, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, pl. 75.

"Long and slender, having the superior antennæ scarcely shorter than the length of the animal; inferior pair nearly a fourth shorter than the superior; peduncle of the inferior subequal with that of the superior. Gnathopoda subequal, robust, having the propoda with the palm convex; pleopoda terminating subequal. "Length 3 lines.

"*Hab.* Coast of Naples.

"This species approximates to *A. filosa*."—*Costa.*

12. Amphithoë Pausilipii.

Amphitoë Pausilipii, *Edwards, Ann. des Sc. Nat.* xx. p. 376; *Hist. des Crust.* iii. p. 30.

"In general form this species resembles *Calliope læviuscula*. Superior antennæ having the second joint of the peduncle as long as the first. Inferior antennæ much shorter than the superior; flagellum scarcely longer than the last joint of the peduncle, consisting of from twelve to fifteen articuli. Eyes small and circular. Gnathopoda moderately strong, and nearly of the same form, the second pair being a little the larger; propodos having the palm short, and forming with the inferior margin an angle of about sixty-five degrees. Basa of the last three pairs of pereiopoda much dilated and posteriorly rounded. Pleon smooth. Posterior pair of pleopoda scarcely passing the extremity of the preceding, and terminating in two short conical rami. Telson posteriorly rounded.

"*Hab.* Bay of Naples."—*Edwards.*

13. Amphithoë Indica. (Plate XLII. fig. 3.)

Amphitoë Inda, *Edwards, Ann. des Sc. Nat.* xx. p. 376.
Amphitoë Indica, *Edwards, Hist. des Crust.* iii. p. 31.

"This species is much like *A. Pausilipii*, but having the antennæ of equal length. Gnathopoda having the palmæ of the propoda straight.

The basa of the three posterior pairs of pereiopoda tapering towards their distal extremities. Telson consisting of a small, triangular very short lamella.

"*Hab.* Indian Ocean."—*Edwards.*

The figure accompanying the above description is drawn from the type, which is preserved in the Museum of the Jardin des Plantes.

14. Amphithoë picta. (Plate XLII. fig. 4.)

Amphithoë picta, *Rathke, Fauna der Krym*, p. 369. tab. 5. figs. 15–19.
Edwards, Hist. des Crust. iii. p. 31.

"Superior antennæ considerably longer than the inferior. Inferior pair having the flagellum shorter than the peduncle. Eyes circular. Gnathopoda subequal, tolerably large, having the palmæ rather oblique. Basa of the three posterior pairs of pereiopoda dilated and posteriorly rounded. Posterior pair of pleopoda short, having the rami shorter than their peduncle and terminating in hooks. Telson small, triangular, scarcely projecting.

"*Hab.* Crimea (*Rathke*)."—*Edwards.*

I can detect no specific distinction between this species and *A. littorina* of our own shores.

15. Amphithoë dentata.

Amphithoë dentata, *Say, Proc. Philad. Acad.* i. p. 383.
Edwards, Ann. des Sc. Nat. xx. p. 377; *Hist. des Crust.* iii. p. 33.

"Antennæ moderate, not remarkably robust. Clypeus obtuse, not projecting beyond the frontal curve. Eyes small, subtriangular, distant above. Gnathopoda having the propoda truncate, palm destitute of prominent teeth; dactylos impinging at the extremity only, not closing on the palm. Three posterior pairs of pereiopoda having the posterior margin of the dilated basos strongly serrated. Telson not remarkably serrated.

"Length $\frac{3}{10}$ths of an inch.

"*Hab.* Freshwater marshes, South Carolina."—*Say.*

16. Amphithoë punctata.

Amphithoë punctata, *Say, Proc. Philad. Acad.* i. p. 383.
Edwards, Hist. des Crust. iii. p. 35.
Amphithoë virescens*, *Stimpson, Invert. of Grand Manan*, p. 53.

"Eyes ovate, acute, distant above. Clypeus not projecting into an

* Stimpson says that this species is of a softer structure than most of the Amphipoda.

angle. Antennæ elongated: superior pair two-thirds as long as the inferior; inferior nearly equal in length to the body, attenuated. Gnathopoda having the propoda not dentated, equal, oval, not larger [broader?] than carpus. Body and antennæ sprinkled with numerous black points, fasciated on the segments of the pleon. Posterior pair of pereiopoda not serrated on the posterior margin of their basa, but armed with three or four short spines.

"Length $\frac{3}{10}$ths of an inch.

"*Hab.* Egg Harbour."—*Say.* "Duck Island moorings, Grand Manan, in 4 fathoms, on a nullipore bottom."—*Stimpson.*

"Perfectly distinct from *A. dentata* by the more elongated and less robust antennæ."—*Say.*

17. Amphithoë maculata.

Amphithoë maculata, *Stimpson, Marine Invert. of Grand Manan*, p. 53.

"Body rather broad, smooth and well rounded above. Coxæ of moderate size, those of the fifth pair largest. Antennæ rather stout, subequal; inferior ones subpediform, with very short terminal articuli. Second pair of gnathopoda having the propodos larger than the first. Five pairs of pereiopoda with small, sharp, curved dactyla; third pair very short. Posterior pleopoda very short and thick.

"Length 0·65 inch; of antennæ 0·22 inch.

"*Hab.* Rocky bottoms, Laminarian zone, and occasionally at low water.

"It differs from *A. punctata* in being more robust and of much harder structure; also totally in colour."—*Stimpson.*

18. Amphithoë filigera.

Amphithoë filigera, *Stimpson, Proc. Acad. Nat. Sc. Philad.* May and June 1855.

"Body thick about the middle, compressed towards the extremities; a few setiferous points on the posterior abdominal segments. Coxæ large. Eyes rounded, bright vermilion. Antennæ very slender; the superior ones nearly as long as the body, their hair-like forty-articulate flagella constituting four-fifths of their length. Gnathopoda in the males subequal, of moderate size, very hairy, deeply notched below for the reception of the closed dactylos. Posterior pair of pleopoda short-ovate or heart-shaped, with small palpiform rami. Colour olive punctate. Coxæ greenish.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Loo Choo."—*Stimpson.*

19. Amphithoë Rathkii.

Amphithoë Rathkii, *Zaddach, Syn. Crust. Pruss. Prodr.* p. 6.

Without rostrum. Antennæ subequal: superior reaching to the fifth or sixth segment of the pleon; peduncle having the last joint furnished with a small dentiform process on the inferior portion of the distal extremity; flagellum having about twenty articuli, each furnished with two short hairs, which give the inferior margin a serrated appearance. Inferior antennæ having the peduncle longer than the peduncle of the superior, the last two joints being nearly equal; flagellum consisting of nearly twenty articuli. In the cephalon are two reniform spots, in which eyes are placed. Gnathopoda subequal; propoda tolerably large, tumid, and pyriform, inferior margin pilose; dactylos curved, being half the length of the inferior margin. First two pairs of pereiopoda slender, with the inferior margins spinose and setose; posterior pair having the basos dilated, with the posterior margin crenulated; dactyla on all the pereiopoda large. Posterior pair of pleopoda with the rami shorter than the peduncle, lanceolate, having the margins dentated and ciliated. Telson oblong, simple, rounded at the apex.

In the *female* the gnathopoda and pereiopoda are more slender.

Length 3 lines.

Hab. Baltic, near Gadanum.—*Abbreviated from Zaddach.*

20. Amphithoë Reynaudii.

Amphitoë Reynaudii, *Edwards, Ann. des Sc. Nat.* xx. p. 378; *Hist. des Crust.* iii. p. 35.

"In general form the animal resembles *Amphithoë Armorica**, but may be distinguished from it by the gnathopoda having exactly the same form, with the propoda elongated, a little enlarged at the base, and with the dactyla impinging against the inferior margin. Basos of the posterior pair of pereiopoda long-quadrate. Telson small, triangular, and obtuse at the apex.

"*Hab.* Cape of Good Hope."—*Edwards.*

21. Amphithoë Chilensis. (Plate XLII. fig. 5.)

Amphithoë Chilensis, *Nicoli, Gay's Chili, Crust.* pls. 2–5.

Superior antennæ three-fourths as long as the animal, having the first joint of the peduncle as long as the cephalon; second as long

* *Vide* Appendix. *Amphithoë Armorica* appears to belong to the genus *Nicea*.

as the first, but more slender; third small. Inferior antennæ three-fourths as long as the superior, having the peduncle nearly as long again as the peduncle of the superior; flagellum scarcely longer than the last joint of the peduncle. First pair of gnathopoda having the propodos ovate, palm short, convex, not oblique, defined by an imperfect obtuse angle: second pair having the propodos long-ovate, palm continuous with the inferior margin, imperfectly defined, having a tubercle in the middle. Third pair of pereiopoda short, two posterior pairs a little longer, all three having the dactyla reversed. Posterior pair of pleopoda extending a little beyond the preceding.

Length $\frac{1}{2}\frac{3}{0}$ths of an inch.

Hab. Coast of Chili (*Gay*).

22. Amphithoë Gaudichaudii.

Amphithoë Gaudichaudii, *Edwards, Hist. des Crust.* iii. p. 31.

"Without a rostrum. Eyes circular. Superior antennæ much longer than the inferior; peduncle having the second joint nearly as long as the first; third very short, and scarcely reaching beyond the extremity of the penultimate joint of the peduncle of the inferior. Inferior antennæ having the flagellum scarcely longer than the penultimate joint of the peduncle. First pair of gnathopoda having the propodos elongate, palm straight, defined by a right angle with the inferior margin. Second pair of gnathopoda having the propodos of nearly the same form as, but a little larger than, the first pair. Basa of the third and fourth pairs of pereiopoda oval (instead of nearly linear as usual); basos of the last pair of pereiopoda round and dilated superiorly, tapering to the distal extremity, and without any distinguishable serrature. Posterior pair of pleopoda short, having the rami very short, almost rudimentary (not being more than half the length of the peduncle). Telson triangular, apex obtuse.

"*Hab.* Taken in the sea near the Brazils."—*Edwards.*

23. Amphithoë pygmæa.

Amphithoë pygmæa, *Liljeborg, Ofvers. af Kongl. Vet. Akad. Förhandl.* 1852, p. 9.
Bruzelius, Skand. Amph. Gamm. p. 32.

"*Male.*—Body thick. Cephalon without a rostrum. Eyes small, round, black. Coxæ large. Antennæ rather large, having the lower margin hirsute: inferior pair longer than the superior, their peduncles nearly equal, having the ultimate and penultimate joints

about equal. Gnathopoda strong, posteriorly setose; second pair the larger. Posterior pair of pleopoda not reaching beyond the preceding, having the inner ramus rudimentary, scarcely visible, the outer furnished with many large setæ. Telson single, minute, triangular. Colour fusco-cinereous, with white bands.

"*Female*.—Stouter, having the second pair of gnathopoda less than in the male, palm strongly dentate and minutely hirsute.

"Length 5 millim.

"*Hab.* Clayey bottom, in from 14 to 16 fathoms, not common."—*Liljeborg*. "At Kullen Promontory."—*Bruzelius*.

24. Amphithoë Vaillantii. (Plate XLII. fig. 6.)

Amphithoë Vaillantii, *Lucas, Expéd. dans l'Algérie*, pl. . f. 3.

Eyes round, black. Superior pair of antennæ about half the length of the animal; inferior pair shorter than the superior. First pair of gnathopoda having the propodos ovate, palm oblique, slightly concave, defined by a small tooth. Second pair of gnathopoda larger than the first, having the carpus nearly as long as the propodos, with the inferior margin produced to an anteriorly directed tooth; propodos subovate, fringed with cilia, having the superior distal angle produced beyond the articulation with the dactylos; palm concave, very oblique, running almost parallel with the superior margin, defined by a strong obtuse tooth or process. Posterior pair of pleopoda scarcely as long as the preceding. Sparingly covered with spots over the body and coxæ.

Length $\frac{11}{20}$ths of an inch.

Hab. Algeria (*Lucas*).

25. Amphithoë dubia. (Plate XLII. fig. 7.)

Anisopus dubius, *Templeton, Trans. Ent. Soc.* i. pl. 20.

Eyes round, small. Superior antennæ more than half the length of the animal; peduncle having the joints gradually decreasing. Inferior antennæ nearly as long as the superior; ultimate joint of the peduncle much smaller than the preceding. First pair of gnathopoda slender; carpus as long as the propodos; propodos long, not broader than the carpus, palm imperfectly defined, ciliated; dactylos half as long as the propodos. Second pair of gnathopoda much larger than the first, having the carpus short; propodos ovate, increasing in diameter towards the distal extremity; palm oblique, convex, imperfectly defined, ciliated; dactylos long, arcuate. Two posterior pairs of pereiopoda having the basa

narrowing to the distal extremity, and the propoda having two curved spines upon the inner distal angle, against which the dactyla impinge. Posterior pair of pleopoda not longer than the preceding, having the external ramus tipped with hooks.

Length $\frac{3}{20}$ths of an inch.

Hab. Atlantic Ocean (*Templeton*).

This description is taken from Templeton's figure, which is not well drawn. There is nothing, either in it or his description, that warrants its being considered a distinct genus; and there is likewise nothing, as regards the drawing, that precludes it from belonging to the genus *Amphithoë*. If the telson (which is neither figured nor described) should be found to be formed into a hook, then it belongs to *Sunamphithoë*; but this not being shown, it is better to retain it in the genus *Amphithoë*, of which it appears to be a young animal.

26. Amphithoë rubella. (Plate XLII. fig. 8.)

Amphithoë rubella, *Dana, U. S. Explor. Exped.* p. 936. pl. 64. f. 1.

"Body rather stout. Coxæ broad. Superior antennæ longer than half the body, second joint much the longest; flagellum nearly twice as long as the base, having about fourteen articuli, articuli long, setæ very few and short. Inferior antennæ shorter than the superior, base much longer than the base of the superior; last joint longest, and about as long as the flagellum. First pair of gnathopoda small, oblong, narrow, narrower at apex. Second pair of gnathopoda stout, broad, subrectangular, transverse at apex, the palm being apical, little excavate, and unevenly so; inferior angle prominent and acute; dactylos moderately large. First and second pairs of perciopoda quite short, fourth and fifth subequal, third much shorter; setæ very few, rather short; basa a little broad, proportionably broadest in the fifth pair.

"Length 3 lines.

"*Hab.* Sooloo Archipelago. Dredged up in $6\frac{1}{2}$ fathoms water, February 2, 1842."—*Dana.*

27. Amphithoë orientalis. (Plate XLII. fig. 9.)

Amphithoë orientalis, *Dana, U. S. Explor. Exped.* p. 937. pl. 64. f. 2.

"Superior antennæ the longer, a little shorter than the body; flagellum very long, articuli oblong; setæ few, some, on the under side, closely appressed, and but little shorter than the articuli, others divaricate and much shorter. Inferior antennæ but little the shorter; base long, somewhat shorter than the flagellum; setæ longish, not shorter than the articuli of the flagellum. Eyes nearly round. First

pair of gnathopoda small, having the propodos oblong, margins nearly parallel; apex truncated, and forming the palm; dactylos longer than the palm; carpus a little shorter than the propodos, and hardly broader. Second pair of gnathopoda having the propodos very stout, subovate, arcuate above, straight below, this part (or the palm) a little raised towards the apex, and furnished with a few short setæ; dactylos long; carpus short, not oblong, forming a very narrow process below, between the gnathopoda and the meros; meros rectangular below. Fourth and fifth pairs of pereiopoda with the third joint narrow; setæ longish, those of the propodos shorter than half the length of the joint.

"Length $2\frac{1}{2}$–3 lines.

"*Hab.* From floating kelp, off Manilla, Philippines."—*Dana.*

28. **Amphithoë Tongensis.** (Plate XLII. fig. 10.)

Amphithoë Tongensis, *Dana, U. S. Explor. Exped.* p. 939. pl. 64. f. 3.

"Body compressed, naked. Coxæ broad. Superior antennæ shorter than the body, base nearly half shorter than the flagellum, second joint longest; flagellum about 40-jointed, setæ short. Inferior antennæ a little the shorter; base rather longer than the base of the superior, and about half as long as the whole antenna; inferior setæ of the flagellum longest, longer than the articuli. Gnathopoda slightly unequal and similar, having the propoda nearly semi-elliptical, upper margin almost straight: first pair the smaller: second pair having the propodos more oblong, narrow at apex, hirsute below, palm oblique; dactylos small, not half as long as the propodos; carpus produced below, process short and quite narrow, but not acute. Three posterior pairs of pereiopoda very unequal, gradually increasing in length.

"Length 6 lines.

"*Hab.* Tongatabu, Pacific; along the shores of coral islets, in shallow water, among sea-weed."—*Dana.*

29. **Amphithoë peregrina.** (Plate XLIII. fig. 1.)

Amphithoë peregrina, *Dana, U. S. Explor. Exped.* p. 940. pl. 64. f. 4.

"*Female.*—Body somewhat slender. Coxæ rather broad, edged with four or five short setæ; fifth pair large. Superior antennæ about half as long as the body, first joint longest; flagellum twice the length of the base, twelve-articulated, articuli oblong, setæ short. Inferior antennæ nearly half shorter, base longer than base of superior pair, third joint longest; flagellum six-jointed, subulate,

a little shorter than base. Both pairs of gnathopoda having the propoda quite small and nearly equal, oblong, arcuate below; dactyla minute. First and second pairs of pereiopoda subequal, not shorter than the second pair of gnathopoda; basa very broad: remaining three pairs rather short, increasing slightly in length from the third to the fifth, setæ minute; basa broad.

"Length 3 lines.

"*Hab.* Among the roots of floating fucus (*Macrocystis*), at sea, thirty miles south-west of Valparaiso."—*Dana.*

30. **Amphithoë brevipes.** (Plate XLIII. fig. 2.)

Amphithoë brevipes, *Dana, U. S. Explor. Exped.* p. 941. pl. 64. f. 5.

"*Female.*—Body compressed. Coxæ broad, the fifth pair subquadrate. Eyes round. Superior antennæ about half as long as the body, first joint longest; flagellum more than twice as long as base, nearly naked, setæ hardly longer than breadth of joint. Inferior antennæ half shorter than the superior, base longer than in superior, third and fourth joints subequal; flagellum much shorter than base, hirsute. Gnathopoda subequal, having the propoda quite small, subrectangular, apex truncate, dactyla minute. First and second pairs of pereiopoda with the basa quite broad, the fourth and fifth gradually increasing in length.

"*Male.*—Second pair of gnathopoda having the propodos large, subovate, arcuate above, below [palm] nearly straight, with a few setæ, and near the apex a minute acute tooth; dactylos long.

"*Hab.* Near Hermit Island, Tierra del Fuego; brought up with kelp, in 5 fathoms water, by Lieutenant Case, January 27, 1839."—*Dana.*

31. **Amphithoë Brasiliensis.** (Plate XLIII. fig. 3.)

Amphithoë Brasiliensis, *Dana, U. S. Explor. Exped.* p. 943. pl. 64. f. 6.

"Near *A. Tongensis.* Body compressed. Coxæ large. Superior antennæ much longer than half the body, flagellum very long and slender, setæ quite short. Inferior antennæ a little shorter than the superior, hirsute; base hardly shorter than flagellum; articuli of flagellum towards the base slightly oblong, setæ of lower side more than twice as long as those above. Gnathopoda subequal: first pair the smaller, slightly arcuate above, rounded below, and hirsute; palm obliquo-transverse; dactylos half as long as propodos: propodos of second pair of moderate size, more hirsute than that of first pair, obliquo-transverse at apex; palm hardly excavate, long-hirsute, acute at the lower limit; carpus broad, produced be-

low, and densely hairy. Setæ of third and fourth pairs of pereiopoda few, nearly as long as joint.

"Length of body 8 lines.

"*Hab.* Rio Janeiro, Brazil."—*Dana.*

The description of this species closely resembles that of *A. Gaudichaudii* of Edwards, the chief distinction being the length of the flagellum of the inferior antennæ.

32. Amphithoë filicornis. (Plate XLIII. fig. 4.)

Amphithoë filicornis, *Dana, U. S. Explor. Exped.* p. 944. pl. 65. f. 1.

"*Female.*—Antennæ hardly shorter than the body, setæ few and very short, the flagella very slender: superior pair a little the longer, flagellum more than three times as long as the base, articuli oblong, setæ on under apex of every other articulus a little longer than on the others: inferior pair having the flagellum twice as long as the base. Gnathopoda subequal and similar: second pair having the propodos a little the larger and of moderate size; margins sparingly arcuate and very hairy, especially below; palm obliquely truncate, hardly excavate, inferior angle subacute; dactylos short; carpus sparingly oblong; the part below, between the meros and propodos, rather broad and densely hairy; meros triangular at inferior apex. Pereiopoda pilose, setæ rather long; sixth and seventh pairs subequal.

"*Hab.* Rio Janeiro."—*Dana.*

33. Amphithoë penicillata.

Amphithoë penicillata, *A. Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 174.

"Superior antennæ longer than the body. Inferior antennæ much shorter than the superior, the peduncle scarcely longer than the peduncle of the superior. Gnathopoda robust; second pair a little the larger, having the propodos oblong, with the upper distal margin produced beyond the base of the dactylos, and furnished with brush-like cilia along the concave palm (in male)—resembling the first pair (in female). Pleopoda of nearly equal length.

"Length 4 lines.

"*Hab.* Coast of Naples."—*Costa.*

34. Amphithoë crassicornis.

Amphithoë crassicornis, *A. Costa, Rend. della Reale Accad. delle Scienze di Napoli*, 1853, p. 174.

"Antennæ long, stout, subequal, a little longer than half the length

of the body, with the peduncle of the inferior pair much longer than that of the superior. First pair of gnathopoda of moderate size, propodos ovato-elliptic; second pair the larger, having the propodos oblong, with the inferior margin slightly oblique, bisinuate. Pleopoda of nearly equal length.

" Length 6 lines.

" *Hab.* Coast of Naples."—*Costa.*

Doubtful species.

35. Amphithoë Azteca.

Amphithoë Aztecus, *Saussure, Rev. et Mag. de Zool.* ix. p. 505, 1858.

" Antennæ nearly equalling half the length of the body; superior shorter than the inferior. Cephalon without a rostrum. Eyes nearly circular. First pair of gnathopoda small; second pair very large. Two posterior segments of the pleon terminated by a *spine*.

" Length 5 millim.

" *Hab.* Vera Cruz."—*Saussure.*

2. SUNAMPHITHOË.

Sunamphithoë, *Spence Bate, Brit. Assoc. Report*, p. 59, 1855; *Synopsis, &c., Ann. Nat. Hist.* Febr. 1857.
White, Hist. Brit. Crust. p. 201.

Telson developed into the form of a hook.

This is the only distinction that separates the animals of this genus from *Amphithoë*.

1. Sunamphithoë Hamulus. (Plate XLIII. fig. 5.) B.M.

Sunamphithoë Hamulus, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Febr. 1857.
White, Hist. Brit. Crust. p. 202.

Eyes (not preserved). Antennæ subequal: superior pair one-third the length of the animal, having the peduncle as long as the flagellum, the third joint scarcely more conspicuous than the first articulus of the flagellum: inferior pair having the flagellum scarcely longer than the last joint of the peduncle. First pair of gnathopoda having the propodos as long again as broad, the superior and inferior margins parallel, palm oblique, furnished with a few short hairs; dactylos as long as the palm, having the inner margin serrated. Second pair of gnathopoda having the propodos subtriangular, nearly as broad as long, broadest at the palm; palm straight,

oblique, and furnished with a few short hairs; dactylos shorter than the palm, having the inner margin serrated. First two pairs of perciopoda short and robust: last three pairs robust, having the propodos terminating obtusely; the distal extremity, against which the dactylos impinges, furnished with one long and two short curved spines, and also a few hairs; dactylos arcuate, and serrated upon the inner margin. Posterior pair of pleopoda not longer than the preceding, having the inner ramus foliaceous and the outer styliform, terminating in two hook-like spines. Telson formed into a very perfect hook.

Length $\frac{14}{20}$ths of an inch.

Hab. Moray Frith (*Rev. G. Gordon*); Penzance (*Mr. Harris*); Shetland (*Mr. Barlee*).

2. Sunamphithoë conformata. (Plate XLIII. fig. 6.) B.M.

Sunamphithoë conformata, *Spence Bate, Brit. Assoc. Report*, 1855; *Synopsis, &c., Ann. Nat. Hist.* Febr. 1857.
White, Hist. Brit. Crust. p. 202.

Eyes round, white, having a red spot in the centre. Superior antennæ nearly as long as the animal; peduncle having the first joint nearly as long as the cephalon, second about half as long as the first, third about half as long as the second; flagellum very slender, nearly four times as long as the peduncle. First pair of gnathopoda small, having the propodos ovate, scarcely broader than the carpus, palm imperfectly defined: second pair having the carpus very short, continuous with the propodos; propodos large, long-ovate, tapering; palm very oblique, waved, having two lobes; dactylos long, waved. First two pairs of perciopoda having the basa broadly dilated anteriorly, and the mera also dilated; third pair short, basos subcircular; fifth pair slightly longer than the fourth, having the basos ovate, and the dactylos strongly arcuate. Posterior pair of pleopoda having the inner ramus foliaceous, and the outer terminating in two powerful hooks. Telson generic.

Length $\frac{8}{20}$ths of an inch.

Hab. Plymouth (*C. S. B.*); Shetland (*Mr. Barlee*).

3. Sunamphithoë podoceroides. (Plate XLIII. fig. 7.)

Amphithoë podoceroides, *Rathke, Nova Acta*, xx. p. 79. pl. 4. f. 4.
Liljeborg, Öfvers. af Kongl. Vet. Akad. Förhandl. 1852, p. 8.
Bruzelius, Skand. Amph. Gamm. p. 31.
Amphithoë albomaculata, *Kröyer, Natur. Tidskr.* Ny Række, Andet B. p. 67; *Voyage en Scand.* pl. 11 B. f. 1.

"Cephalon without a rostrum. Eyes small, round. Superior an-

tennæ a little longer than the inferior. Gnathopoda subequal, robust; dactyla serrated. Rami of the posterior pair of pleopoda subequal, short, conical. Telson armed with two curved spines.

"*Hab.* Common from Finmark to Fretum Sound."—*Bruzelius.*

I have followed Bruzelius in accepting *Amphithoë albomaculata* as synonymous with *A. podoceroides*. Kröyer, in the plates of his 'Voyage en Scandinavie,' represents the telson of *A. albomaculata* as simple, squamous, rounded at the apex. Should Bruzelius be in error in stating it as terminating in two hooks, then it differs in nothing from the genus *Amphithoë*.

3. PODOCERUS.

Podocerus, *Leach, Linn. Trans.* xi. p. 360.
Desmarest, Consid. sur les Crust. p. 269.
Edwards, Hist. des Crust. iii. p. 63.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.
Gosse, Mar. Zool. p. 141.
White, Hist. Brit. Crust. p. 197.
Bruzelius, Skand. Amph. Gamm. p. 20.
Jassa, *Leach, Linn. Trans.* xi. p. 361.
Desmarest, Consid. sur les Crust. p. 269.
White, Hist. Brit. Crust. p. 198.
Ischyrocerus, *Kröyer, Grönl. Amfip.* p. 283.
Cratophium, *Dana, U. S. Explor. Exped.* p. 841.
Elasmopus, *Costa, Rend. della Reale Accad. delle Scienze di Napoli,* 1853, p. 170.

Eyes small, situated on a lobe between the superior and inferior antennæ. Superior antennæ having a secondary appendage, which is generally very minute. Inferior antennæ robust, the flagellum consisting of but few articuli and as stout as the peduncle, the hairs towards the extremity being developed into spines, which increase in strength as they approach the apex, where they become curved. Second pair of gnathopoda having the propodos (in the male) much larger than that of the first pair. Two anterior pairs of pereiopoda short, having the basa very broad. Posterior pair of pleopoda having two rami, one of which is armed with one or more hooked spines. Telson squamiform.

The genus *Podocerus*, founded by Leach, differs only in specific characters from *Jassa* of the same author, the proof of which is manifested by the several species being intermingled in the cabinet in the British Museum. The genus *Cratophium* of Dana differs in nothing from *Podocerus*: and had Leach been more definite in his description, there is no doubt that Dana would himself have incorporated them.

1. Podocerus pulchellus. (Plate XLIII. fig. 8.) B.M.

Jassa pulchella, *Leach, Edinb. Encycl.* vii. p. 433; *Linn. Trans.* xi. p. 361.
Desmarest, Consid. sur les Crust. p. 267.
Edwards, Règne Animal, pl. 61. f. 3.
Podocerus pulchellus, *Edwards, Ann. des Sci. Nat.* xx. p. 384; *Hist. des Crust.* iii. p. 64.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 198.
Gosse, Marine Zool. p. 141.
Podocerus calcaratus, *Rathke, Nova Acta,* xx. p. 91. pl. 4. f. 9.
Bruzelius, Skand. Amph. Gamm. p. 22.

Eyes small, round. Superior antennæ as long as the peduncle of the inferior, rather slender, except the first joint of the peduncle, which is robust; flagellum but little longer than the last joint of the peduncle. Inferior antennæ nearly half the length of the animal; flagellum shorter than the last joint of the peduncle, consisting of three articuli, of which the first is as long as the other two, the terminal one crowned with long hairs and two hooked, double-pointed spines. First pair of gnathopoda not very large; propodos subtriangular, broadest at the palm, fringed with a few hairs and double-pointed spines; dactylos serrated upon the inner margin. Second pair of gnathopoda having the propodos extremely large, being nearly as long as the cephalon and the first two segments of the pereion; palm nearly the whole length of the inferior margin, concave, defined by a large and powerful process almost one-fourth the length of the propodos, against the apex of which the point of the dactylos impinges. Posterior pair of pleopoda not extending beyond the preceding, having the rami scarcely more than one-fourth the length of the peduncle and tipped with a solitary obtusely curved spine, the outer ramus having the upper margin slightly serrated. Telson triangular.

Length $\frac{4}{20}$ths of an inch.

Hab. Plymouth (*Mr. Stewart* and *C. S. B.*); Swansea (*C. S. B.*); Banff (*Mr. Edward*).

This species closely resemble *P. validus*, Dana, and demonstrates (as I have previously observed) the close resemblance between the European and S. American Crustacea.

2. Podocerus validus. (Plate XLIII. fig. 9.)

Cratophium validum, *Dana, U. S. Explor. Exped.* p. 841. pl. 56. f. 2.

"*Male.*—Cephalon as long as the first two segments of the pereion together, a little salient before the eye. Antennæ long, ciliate below: superior pair much more slender and rather shorter than the

inferior pair, third joint shorter than the second; flagellum having five articuli, first articulus oblong: inferior pair very stout, fourth joint much longer than the third, fifth* as long as the third, sixth and seventh (last) minute. First pair of gnathopoda with a small subovate propodos: second pair very stout; the propodos oblong and thick, nude, having a long, stout, immoveable process below near the base; dactylos long, reaching beyond the process on the propodos, scarcely curved. Posterior pair of pleopoda reaching back hardly beyond the first. Three posterior pairs of pereiopoda with a few short setæ.

"*Female.*—Body stouter. Propodos of the second pair of gnathopoda stout, oblong, but little smaller than in the male, arcuate above, somewhat excavate and hirsute below and three-toothed, two of the teeth near the base, and one near the apex.

"Length 5 lines.

"*Hab.* Rio Janeiro, Brazil; dredged in the harbour."—*Dana.*

3. Podocerus variegatus. (Plate XLIII. fig. 10.) B.M.

Podocerus variegatus, *Leach, Edinb. Encycl.* vii. p. 433; *Linn. Trans.* xi. p. 361.
Desmarest, Consid. sur les Crust. p. 269.
Edwards, Ann. des Sci. Nat. xx. p. 63; *Règne Animal,* pl. 61. f. 4; *Hist. des Crust.* iii. p. 63.
Spence Bate, Report Brit. Assoc. 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 197.
Gosse, Marine Zool. i. p. 141.

Eyes small, oblong. Superior antennæ nearly as long as the inferior. Inferior antennæ having the flagellum not so long as the last joint of the peduncle, consisting of four articuli; the last three, besides having numerous hairs, some of which are fringed with cilia, are armed with several spinous hooks. First pair of gnathopoda having the propodos ovate, tapering; dactylos serrated: second pair much larger than the first; propodos ovate, palm oblique, imperfectly defined. Posterior pair of pleopoda having the rami short; the inner one foliaceous, terminating in a spinous process, the outer in a triple-pointed hook. Telson triangular.

Length $\frac{1}{20}$ths of an inch.

Hab. Plymouth (*C. S. B.*); Bell Rock (*Stevenson*).

The figure in the 'Règne Animal' has the first and second segments of the pleon postero-dorsally produced into teeth; but as Edwards gives it as *P. variegatus* of Leach, it is evidently an error of the artist.

* First articulus of flagellum?

4. **Podocerus falcatus.** (Plate XLIV. fig. 1.) B.M.

Cancer (Gammarus) falcatus, *Montagu, Linn. Trans.* ix. pl. 5. f. 2.
Cerapus pelagicus, *Edwards, Hist. des Crust.* iii. p. 61.

Eyes round. Superior antennæ as long as the peduncle of the inferior; flagellum having three articuli. Inferior antennæ one-third the length of the animal: flagellum not so long as the last joint of the peduncle, having four articuli. First pair of gnathopoda having the propodos ovate, tapering: second pair having the propodos ovate, palm concave, defined by an obtuse angle, armed near the centre with a single anteriorly-directed tooth, and anteriorly with two small tubercles; dactylos having a prominence near the middle of the inner margin. Posterior pair of pleopoda having the inner ramus styliform, tipped with a single spine, outer terminating in a double-pointed hook.

Length $\frac{7}{20}$ths of an inch.

Hab. S. Devon (*Montagu*); S. Wales and Plymouth (*C. S. B.*); Helford, near Falmouth, and Tenby (*Mr. Webster*); Polperro (*Mr. Loughrin*).

5. **Podocerus pelagicus.** (Plate XLIV. fig. 2.) B.M.

Jassa pelagica, *Leach, Linn. Trans.* xi. p. 361.
Desmarest, Consid. sur les Crust. p. 270.

Eyes round. Superior antennæ as long as the peduncle of the inferior. Inferior antennæ having the flagellum scarcely as long as the last joint of the peduncle; the last two articuli, besides having hairs, armed with curved, double-pointed spines. First pair of gnathopoda ovate, tapering, having the palm not defined, fringed with cilia; dactylos serrated upon the inner margin: second pair having the propodos long-ovate, palm nearly the whole length of the inferior margin, waved, defined by two or three obtusely-pointed spines, fringed with a few hairs, some of which are plumose. Posterior pair of pleopoda having the inner ramus foliaceous, tipped with a single straight spine, the outer terminating in two or three small hooks.

Length $\frac{5}{20}$ths of an inch.

Hab. Tenby, Ilfracombe (*Gosse*).

6. **Podocerus capillatus.** (Plate XLIV. fig. 3.) B.M.

Podocerus capillatus, *Rathke, Nov. Act. Acad. Leopold.* xx. p. 4. f. 8.
Jassa capillata, *Bruzelius, Skand. Amph. Gamm.* p. 19.

Female.—Eyes round. Superior antennæ as long as the inferior; inferior one-third the length of the animal. First pair of gna-

thopoda having the propodos slender, tapering; second pair having the propodos ovate, palm deeply concave, unarmed. In other respects the animal resembles *P. variegatus*.

Length $\frac{4}{20}$ths of an inch.

Hab. Trawled off Plymouth (*C. S. B.*); Polperro (*Mr. Loughrin*). "Coast of Norway and Bohusia: gregarious" (*Bruzelius*).

I have recently received, from my valued correspondent Mr. Loughrin, some specimens of the nests of *Podoceri*, built among zoophytes; in one of these was a female of this species, carrying eggs, while sheltered in the same nest were many young, evidently of different ages.

7. Podocerus cylindricus. (Plate XLIV. fig. 4.) B.M.

Podocerus cylindricus, *Say, Journ. Acad. Philad.* i. pt. 2.
Edwards, Hist. des Crust. iii. p. 64.
Ischyrocerus anguipes, *Kröyer, Grönl. Amfip.* p. 238. t. 3. f. 14.
Edwards, Hist. des Crust. iii. p. 56.
Cerapus fucicola, *Stimpson, Marine Invert. Grand Manan*, p. 48. f. 34.
Podocerus anguipes, *Bruzelius, Skand. Amph. Gamm.* p. 21.
Gammarus Zebra, *Rathke, Fauna Norveg. in Act. Acad. Leopold.* xx. p. 74. pl. 3. f. 4 (female).
Ischyrocerus minutus, *Liljeborg, Kongl. Vetensk. Akad. Handl.* 1850. p. 335; *Ofvers. af Kongl. Vet. Akad. Förhandl.* 1855, p. 128 (young).

Eyes round. Superior antennæ longer than the peduncle of the inferior; flagellum longer than the last joint of the peduncle. Inferior antennæ more than half the length of the animal; flagellum scarcely half the length of the last joint of the peduncle, the last three articuli having, besides hairs, strong spines, which increase in curvature until, at the apex of the last articulus, they form perfect hooks. First pair of gnathopoda having the propodos ovate, tapering, palm oblique, imperfectly defined by four sharp spines; dactylos long, but slightly bent, serrated (almost pectinated) upon the inner margin. Second pair of gnathopoda having the propodos very long, as long as the cephalon and first segment of the pereion, upper margin arcuate, the lower nearly parallel with the upper, fringed with cilia, palm not defined; dactylos short, coarsely serrated upon the inner margin. Posterior pair of pleopoda having the inner ramus simply styliform, the outer terminating in three hooks.

The *female* differs from the *male* only in the slightly smaller size of the propodos of the second pair of gnathopoda.

Length $\frac{8}{20}$ths of an inch.

Hab. Egg Harbour (*Say*); Sukkertopper, Greenland (*Holböll*); Grand Manan (*Stimpson*).

Say remarks of his specimen (the length of which he gives as only $\frac{3}{20}$ths of an inch), that "it is one of the many species of this class that may be found inhabiting marine plants, fucus, &c., and also zoophytes, devouring the fabricators of the latter, and seeking a fugitive prey amongst the leaves of the former."

The description and figure are taken from a specimen kindly sent to me by Mr. Stimpson, which I have compared with an unnamed specimen in the British Museum presented by M. Holböll.

8. Podocerus latipes.

Ischyrocerus latipes, *Kröyer, Nat. Tidskr.* iv. p. 162.

"Flagellum of the superior antennæ equalling or a little surpassing the last joint of the peduncle; secondary appendage scarcely half the length of the first articulus of the flagellum. Last joint of the peduncle of the inferior antennæ shorter than the flagellum; first articulus of the flagellum shorter than the others. Second pair of gnathopoda dilate, ovate. Third pair of pereiopoda much shorter than the fourth and fifth, having their basa considerably dilated, and the mera, carpi, and propoda with their margins entire. Coxæ of the first and second pairs of pereiopoda a little deeper than that of the second pair of gnathopoda; coxa of the second pair of pereiopoda slightly arcuate.

"*Hab.* Southern Greenland (*Hölboll*)."—*Kröyer.*

This species approximates closely to *P. variegatus*.

9. Podocerus ocius, n. s. (Plate XLIV. fig. 5.) B.M.

Eyes round. Superior antennæ longer than the peduncle of the inferior. Inferior antennæ nearly half the length of the animal, having the flagellum about the length of the last joint of the peduncle, consisting of three articuli, of which the first articulus is much longer than the other two, the last very small, and furnished with a long, slightly curved spine and a few hairs. First pair of gnathopoda having the propodos ovate, tapering; palm oblique, not defined; dactylos serrated. Second pair of gnathopoda having the propodos long-ovate; palm very oblique, half the length of the propodos, defined by an anteriorly-directed obtuse tooth, and armed with a long central obtuse tooth, anteriorly directed, and three anterior tubercles; dactylos having the inner margin smooth.

Length $\frac{3}{20}$ths of an inch.

Hab. Ilfracombe (*Gosse*).

10. Podocerus orientalis. (Plate XLIV. fig. 6.)

Cratophium orientale, *Dana, U. S. Explor. Exped.* p. 843. pl. 56. f. 3.

"*Female*?—Eyes round. The four antennæ subequal, about half as long as the body: superior pair a little the longer, three basal joints nearly equal in length; flagellum twice as long as the third joint, having five articuli, the first articulus being as long as all the rest; secondary appendage consisting of one articulus: inferior pair stout, five-jointed*; second, third, and fourth joints subequal, the last† minute. Propodos of the first pair of gnathopoda of moderate length, oblong, nearly straight above, arcuate and hairy below; dactylos rather long: propodos of the second pair somewhat stouter, subovate; palm nearly longitudinal, three-toothed (like the female of *P. validus*), one tooth anterior, one submedian, and one posterior (the submedian obtuse); dactylos long; carpus very small, not produced below between the propodos and meros.

"Length nearly 3 lines.

"*Hab.* From the sea off the eastern entrance of the Straits of Sunda. Collected March 4th, 1842."—*Dana.*

11. Podocerus nitidus.

Podocerus nitidus, *Stimpson, Marine Invert. Grand Manan*, p. 45.

"Small, slender, compressed, smooth and shining above, and of a pale-yellow wine-colour. Cephalon elongated. Eyes oval, black, placed obliquely a little below the bases of the superior antennæ. Antennæ slender (superior ones most so), very hairy, about equal in length; the superior ones having the longest flagellum. First pair of gnathopoda elongated, with numerous long hairs on their edges; propodos smaller and narrower than the carpus; dactylos strong, equalling the propodos in length: second pair large, with a stout spine on the ischium in front; propodos large, oval; dactylos small, curved, and half the length of the propodos. First and second pairs of perciopoda very small, fourth and fifth long, dactyla strong and sharp. Antepenultimate pair of pleopoda much the longest, reaching as far as the extremities of those of the penultimate; ultimate small, biramous, with blunt tips.

"Length 0·3 inch.

"*Hab.* Dredged in 30 fathoms, on a shelly bottom, in Hake Bay, Grand Manan."—*Stimpson.*

* The numbers, as used by Dana, do not refer to any homological position, but only to such joints as are visible. The peduncle of the inferior antennæ in the Gammarina persistently consists of five joints and the flagellum.

† Flagellum?

4. DERCOTHOË (=CERAPUS ♀).

Dercothoë, *Dana, U. S. Explor. Exped.* p. 968.

"Coxæ moderately large; fifth nearly equally two-lobed, and hardly shorter than the fourth. The lateral margin of the front, which bears the eye, often very salient. Posterior pair of pleopoda quite simple, rather long; branch short, with a relaxed apex bearing two very short spines. Superior antennæ usually the longer, appendiculate."—*Dana.*

The individuals comprised in this genus are undoubtedly females of *Cerapus*; but since the males of many species have not yet been recognized, it may be convenient for a time to retain the name of *Dercothoë*. Kröyer* remarks that *Erichthonius* of Edwards (which in this Catalogue is considered a synonym of *Cerapus*) is the male of *Podocerus*. The general resemblance of the female of *Cerapus*† to *Podocerus* is considerable. Its difference consists chiefly in the absence of the inner ramus to the posterior pair of pleopoda, the prolongation of the carpus of the second pair of gnathopoda upon the inferior margin of the propodos, and the form of the telson; hence it is not difficult to assume that Kröyer's observation relates to the female of *Cerapus*, that is, to Dana's genus *Dercothoë*.

The male and female of *Podocerus* bear a considerable resemblance to each other, and cannot be confounded with any other genus; and when Stimpson published his 'Natural History of the Marine Invertebrata of Grand Manan,' he must have been aware of these facts; but it does not appear that he fully appreciated their importance.

1. Dercothoë (Cerapus) emissitius. (Plate XLIV. fig. 7.)

Dercothoë emissitius, *Dana, U. S. Explor. Exped.* p. 969. pl. 66. f. 9.

"Body slender. Cephalon oblong, with an ocular prominence on the front margin, each side. Antennæ setose: the superior pair hardly longer than half the body; first and third joints subequal, second longer; flagellum not longer than the base, possessing about seven articuli; secondary appendage having three articuli: inferior pair shorter; base about as long as the base of the superior pair; third and fourth joints subequal, second short; flagellum shorter than the base, possessing about seven articuli. First pair of gnathopoda quite small, having the propodos very narrow: second pair strong; propodos large, subovate, sparsely setose, above sparingly arcuate, palm not at all excavate; dactylos half as long as the propodos. Three posterior pairs of pereiopoda gradually increasing in length, setæ few; the third pair shorter than the second.

"Length 4 lines.

"*Hab.* Sooloo Archipelago, dredged in $6\frac{1}{2}$ fathoms water. Collected February 2, 1842."—*Dana.*

* Nat. Tidskr. iv. p. 163.

† *Vide* p. 266 (*C. difformis*, fem.).

2. **Dercothoë (Cerapus) speculans.** (Plate XLIV. fig. 8.)

Dercothoë speculans, *Dana, U. S. Explor. Exped.* p. 971. pl. 67. fig. 1.

"Slender. Coxæ small, margin sparsely hairy. Cephalon slightly oblong. Antennæ subequal, longer than half the body, setose below; flagella not longer than the base, terete, articuli oblong: second and third joints of superior pair subequal, the first shorter; fourth joint of inferior pair longer than the third. First pair of gnathopoda rather smaller than the second pair; the propodos and carpus taken together elliptical in outline, and hirsute below; propodos hardly oblong, slightly shorter than the carpus. Second pair of gnathopoda large; propodos narrow, subelliptical above, arcuate below, and narrow at apex and base; palm not excavate, hirsute: carpus subtriangular, slenderly produced below the propodos (the process is not appressed to the propodos); dactylos rather long. First and second pairs of pereiopoda equal, basa nearly round; third pair scarcely longer than the second; fourth and fifth long and subequal, the fifth somewhat the longest, basa oblong, setæ few.

"*Hab.* Sooloo Archipelago; dredged in $6\frac{1}{2}$ fathoms, February 2, 1842."—*Dana.*

3. **Dercothoë (Cerapus) hirsuticornis.** (Plate XLIV. fig. 9.)

Dercothoë? hirsuticornis, *Dana, U. S. Explor. Exped.* p. 972. pl. 67. fig. 2.

"*Female.*—Coxæ rather large. Cephalon with each side in front produced into a prominence containing the eyes. Antennæ with rather long setæ arranged along the lower side: superior pair not half as long as the body; first joint of the base not longer than the third; flagellum nearly as long as the base; secondary appendage having three articuli: inferior pair shorter, four basal joints subequal (the last longest, the first shortest); flagellum shorter than the base. Gnathopoda small. Second pair of pereiopoda stouter than the first; three posterior pairs gradually increasing in length; setæ short, few.

"Length 3–4 lines.

"*Hab.* From the Island of Enchados, Bay of Rio Janeiro, Brazil; found among the Serpulas of the shores."—*Dana.*

4. **Dercothoe (Cerapus) punctatus.** (Plate XLIV. fig. 10.) B.M.

Podocerus punctatus, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Female.—Eyes round, black. Superior antennæ one-third the length of the animal; first joint of the peduncle stout and abruptly trun-

cate; second and third more slender than the first, subequal, each longer than the first; flagellum a little longer than the last joint of the peduncle. Inferior antennæ nearly as long as the superior; last joint of the peduncle longer than the preceding. First pair of gnathopoda small; carpus and propodos equally together forming an oval, the superior margin arcuate, inferior nearly straight, palm not defined; dactylos arcuate. Second pair of gnathopoda longer than the first, having the carpus but slightly produced along the inferior margin of the propodos; propodos ovate, tapering; palm very oblique, slightly concave, imperfectly defined by a few cilia; dactylos arcuate, serrated upon the inner side with minute teeth and several equidistant larger ones. First pair of pereiopoda having the basos largely dilated, second like the first, third short, fifth and sixth long; last three having the basa produced at the distal extremity to an obtuse angle, and the dactyla serrated on the inner margin and unguiculate. Fourth pair of pleopoda having five equidistant spines upon the outer margin of the peduncle; rami having the margins serrated and furnished with a few spines, the inner ramus shorter than the outer and tipped with a single strong spine: fifth pair shorter than the preceding; sixth pair having the peduncle robust, the ramus terminating in two short, obtuse, curved spines. Telson double-lobed, each lobe armed with several rows of short sharp teeth.

Length $\frac{1}{20}$ths of an inch.

Hab. Northumberland (*Mr. Alder*); Oxwich Bay, Glamorgan (*C. S. B.*).

5. Dercothoë? (Cerapus) productus.

Dercothoë? productus, *Stimpson*, *Proc. Acad. Nat. Sci. Philad.* May and July, 1855.

"Ophthalmic lobes of the cephalon much produced, bearing the eyes at their rounded extremities. Antennæ of equal length, one-half that of the body, with a few long hairs; flagella with ten much-elongated articuli. Gnathopoda subequal, oblong. Posterior pair of pleopoda with short rami, the outer ones uniform, the inner minute, spine-like. Telson subcordiform, pointed behind.

"Length $\frac{2}{3}$rds of an inch.

"*Hab.* Tanegasima [Japan?]."—*Stimpson.*

The posterior pair of pleopoda terminating in two rami, together with the form of the telson, incline me to believe that this species belongs to the genus *Nænia*; but I hesitate to make the change, since I only know the animal from the author's description.

5. CERAPUS.

Cerapus, *Say, Journ. Acad. Philad.* i. p. 49.
Desmarest, Consid. sur les Crust. p. 271.
Edwards, Ann. des Sci. Nat. xx. p. 382.
Templeton, Trans. Ent. Soc. i. p. 188.
White, Hist. Brit. Crust. p. 189.
Gosse, Marine Zool. i. p. 140.
Erichthonius, *Edwards, Ann. des Sci. Nat.* xx. p. 383.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 196.
Cerapodina, *Edwards, Hist. des Crust.* iii. p. 62.
Pyctilus, *Dana, U. S. Explor. Exped.* p. 973.

Not laterally compressed. Coxæ not more than half as deep as their respective segments of the body. Antennæ subequal; peduncles longer than the flagella. First pair of gnathopoda complexly* subchelate: second pair much larger than the first; dactyla antagonizing with a prominent process on the carpus. First three pairs of pereiopoda short and robust, last two long. Posterior pair of pleopoda robust, single-branched, ramus terminating in two small hooks. Telson bilobed, each lobe crowned with several rows of curved teeth, the points of which are directed upwards.

Milne-Edwards founded the genera *Erichthonius* and *Cerapodina*, with articulated flagella to the antennæ, in order to distinguish them from *Cerapus*, in which, according to Say, the flagella consist of a single joint (a not unusual term with some authors even when they are articulated), and on account of some inaccuracies in Templeton's description and figure of *Cerapus abditus*. Dana's separation of *Pyctilus* from *Erichthonius* depends chiefly upon the figure of *E. difformis* in the 'Hist. des Crust.' being drawn with the coxæ of the gnathopoda fused with the segments of the pereion—which, Professor Milne-Edwards informs me, is owing to an error of his artist. It is for these reasons that I consider the genera *Erichthonius*, *Cerapodina*, and *Pyctilus*, together with *Dercothoë*, as merely synonyms of *Cerapus*.

1. Cerapus tubularis. (Plate XLV. fig. 1.)

Cerapus tubularis, *Say, Journ. Acad. Philad.* i. p. 49. pl. 4. f. 7–11.
Edwards, Ann. des Sci. Nat. xx. p. 382.
Desmarest, Consid. sur les Crust. p. 271.

"Cephalon having a mucronate carina before. Eyes oval, black, hardly prominent. First pair of gnathopoda with the propodos small, ovate; dactylos not closing on the propodos: second pair having the carpus large, triangulate, the infero-distal angle being produced to a point; propodos narrow; dactylos shorter than the

* By this term I mean, whenever the chelate character depends upon other joints than the propodos.

propodos, its apex impinging against the infero-distal angle of the carpus. Body blackish, with irregular pale spots. Antennæ and appendages white, joints tipped with blackish. Two hind pairs [pleopoda?] white.

"Length $\frac{1}{4}$ of an inch.

"*Hab.* United States of N. America. Living in a free, cylindrical, membranaceous, diaphanous tube."—*Say.*

Say states the upper antennæ to be four-, the lower five-jointed; and M.-Edwards thereupon constituted his genus *Erichthonius*, as possessing a short flagellum. It has been usual with some naturalists to describe the flagellum itself as a joint, and to distinguish it as being divided into segments. I have therefore considered Say's apical 'joints' to the antennæ as true flagella, which appears to coincide with the descriptions by Templeton and Stimpson.

2. Cerapus abditus. (Plate XLV. fig. 2.) B.M.

Cerapus abditus, *Templeton, Trans. Ent. Soc.* i. p. 188. pl. 20. f. 5.
Cerapodina abditus, *Edwards, Hist. des Crust.* iii. p. 62.
Erichthonius difformis, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857 (not *Edwards*).
White, Hist. Brit. Crust. p. 196.

Eyes diagonally ovate, red. Antennæ subequal, scarcely half the length of the animal: inferior pair having the last three joints of the peduncle gradually increasing in length; flagellum scarcely as long as the last joint of the peduncle. First pair of gnathopoda having the coxa small; carpus broad, and continuous with the propodos; propodos subtriangulate, being as broad as the carpus at the near extremity, and rapidly tapering to the distal extremity; palm convex; dactylos arcuate, serrated. Second pair of gnathopoda very large, having the carpus very large, and continuous with, but much longer and broader than, the propodos,—the inferior margin anteriorly produced to a large double-pointed process, against which the apex of the dactylos impinges; propodos scarcely more than half as broad as the carpus; palm occupying the entire length of the inferior margin, irregularly waved; dactylos slightly curved, with the inner margin distended. First two pairs of pereiopoda short, having the basa dilated as largely as in the three posterior, and the propodos and dactylos gradually decreasing to a sharp point: third pair having the propodos enlarged at the extremity and furnished with a stout spine; dactylos short, robust, arcuate: the last two pairs like the third, but longer and more slender. Antepenultimate and penultimate pairs of pleopoda styliform, terminating in sharp straight spines; the penultimate shorter than the preceding: ultimate very strong, being broad at

the base and tapering towards the extremity; ramus short, robust, tapering, tipped with obtuse, short, curved spines. Telson having about six rows of teeth upon each lobe. Colour corneous, sparingly covered with black dots.

Length $\frac{8}{20}$ths of an inch.

Hab. Oxwich Bay, Glamorgan (*C. S. B.*); Plymouth (*Mr. Stewart* and *C. S. B.*); Northumberland (*Rev. A. M. Norman*); Atlantic Ocean (*Templeton*).

Templeton describes the colour of the eyes of his specimen as black, with a pale encircling ring; but in all other respects it appears to agree with the British species.

3. **Cerapus Hunteri**, n. s. (Plate XLV. fig. 3.)

Male.—Eyes small, round. Antennæ subequal: superior pair nearly the length of the animal; first joint of the peduncle scarcely as long as the cephalon; second and third subequal, longer than the first; flagellum somewhat longer than the last joint of the peduncle: inferior pair having the peduncle scarcely shorter than the peduncle of the superior. First pair of gnathopoda furnished with several short rows of hairs, and having the meros infero-anteriorly produced to an obtuse point; carpus longer than the propodos, anteriorly truncate; propodos subcircular, narrow at the carpus, gradually enlarging towards the anterior margin; palm convex, not defined, forming with the inferior margin a continuous semicircle; dactylos short, serrated. Second pair of gnathopoda having the carpus large, infero-anteriorly produced to a sharp point; propodos about half the width of the carpus; palm parallel with the superior margin, and furnished with a baccate edge having a deep excavation near the centre; dactylos scarcely as long as the propodos. First two pairs of pereiopoda subequal, having the basa posteriorly straight, anteriorly extremely arcuate. Posterior pair of pleopoda nearly as long as the preceding. Telson double-lobed, having five or six rows of small denticles or spines on each.

Female.—Like the male, but having the second pair of gnathopoda with the propodos ovate; palm slightly convex, imperfectly defined by one or two lateral spines; carpus produced along the inferior margin of the propodos.

Length of male $\frac{12}{20}$ths of an inch.

Hab. Not recorded.

This specimen is preserved in the collection of the Royal College of Surgeons, and is named in compliment to the founder of their Museum.

4. Cerapus rubricornis. (Plate XLV. fig. 4.) B.M.

Cerapus rubricornis, *Stimpson, Marine Invert. Grand Manan*, p. 47. f. 33.

Male.—Much broader than high, tapering at both extremities. Cephalon about half the width of the second thoracic segment. Eyes round, black. "Antennæ strongly subpediform, curving downwards and very hairy; the inferior ones a little the longer." First pair of gnathopoda small, subcheliform: second pair long; carpus very large, with the inferior angle produced to a long, sharp process; propodos half the width of the carpus, palm waved; dactylos as long as the propodos. The whole of the chelate organ, when closed, is of an elongate-oval form. First and second pairs of pereiopoda small, but with broad flat basa; third pair shortest of all; fourth and fifth slender, with sharp dactyla. "Antepenultimate and penultimate pairs of pleopoda with long peduncles; ultimate pair very short, simple, and subuncinate at their extremities. Colour on the back dark mottled grey; coxæ blackish; flagella of the antennæ bright red."

"*Female*.—Larger than *male*. Superior antennæ as long as the inferior. Second pair of gnathopoda not large, with a small, short and broad propodos; dactylos short; carpus produced into a sharp projection. Colour as in the male, except that the under side of the pereion is of a bright yellow, from the contained eggs."

Length of female, $\frac{5}{20}$ths of an inch; "male, 0·41 inch."

"*Hab*. Dredged abundantly on the stems of *Boltenia* in 20 fathoms, rocks off Cheney's Head, and in 25 fathoms, off Duck Island. Specimens occurred on the 10th of August with eggs, which were hatched on the 25th of the same month."

"This species inhabits flexible tubes composed of fine mud and some animal cement, by which it is agglutinated. These tubes are generally adherent to some foreign body for about half their length, and closed below. They are mostly found in large groups, attached to submarine objects and to each other."—(The quotations are abbreviated from *Stimpson*. The rest of the description is taken from a specimen sent me by the author.)

5. Cerapus difformis. (Plate XLV. fig. 5.)

Erichthonius difformis, *Edwards, Ann. des Sc. Nat.* xx. p. 382; *Hist. des Crust.* iii. p. 60. pl. 29. f. 12.

Male.—Eyes small, round, black. Superior antennæ rather more than half the length of the animal. Inferior antennæ nearly as long as the superior. First pair of gnathopoda small, having the carpus inferiorly deeply arcuate, but not anteriorly produced,

fringed with cilia; propodos not longer than the carpus, and nearly of the same ovate form; palm convex, not defined, fringed with a few cilia. Second pair of gnathopoda large, having the carpus broad, very largely produced supero-posteriorly, and also produced infero-anteriorly to a long, sharp, single-pointed process; propodos scarcely more than half the width of the carpus, margins subparallel, the lower being slightly waved; dactylos having the inner margin smooth. The rest of the animal does not differ materially from *C. abditus*.

Female.—Resembles the male in everything except in the form of the second pair of gnathopoda: the carpus is not supero-posteriorly produced, and the infero-anterior process is developed in the form of a plate that corresponds with the inferior surface of the propodos; propodos ovate, palm but slightly defined; dactylos less powerful than in the male.

Length of male $\frac{7}{20}$ths, of female $\frac{3}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*); Northumberland (*Rev. A. M. Norman*); coasts of Bretagne (*Milne-Edwards*).

I have only seen dead specimens; they were spotted much like *C. abditus*. Among those kindly lent to me by the Rev. A. M. Norman is one that has the gnathopodos on the left side of the second pair malformed—the malformation assuming the character adapted to the female.

6. Cerapus macrodactylus. (Plate XLV. fig. 6.)

Pyctilus macrodactylus, *Dana, U. S. Explor. Exped.* p. 974. pl. 67. f. 3.

"Body rather slender. Coxæ of moderate size. Cephalon oblong; the front margin of either side with a projection containing the eye. Antennæ elongate: inferior pair shorter than the body; third and fourth joints long, subequal; flagellum a little shorter than the base, having about ten articuli, setæ very short. First pair of gnathopoda small; the propodos and carpus together narrow elliptical in outline, short hirsute; dactylos small. Second pair of gnathopoda very stout; carpus and propodos* together <-shaped, the immoveable process being very much elongate, simple, and pointed, and the upper portion projecting very far beyond its base; dactylos very long, as long as the propodos, and sparsely short-hirsute. First and second pairs of pereiopoda subequal; third pair with the first joint having a narrow acute prolongation behind.

"*Hab.* East Indies, in the Sooloo Sea."—*Dana*.

* "Hand," *Auct.*

7. Cerapus pugnax. (Plate XLV. fig. 7.)

Pyctilus pugnax, *Dana, U. S. Explor. Exped.* p. 975. pl. 67. f. 4.

"Superior antennæ having the base about as long as the flagellum. Propodos of second pair of gnathopoda very large, oblong, longer than the dactylos, sparingly erose within, and bearing a few minute, short setæ; superior and inferior margins parallel; carpal process short, and bidentate at the apex, upper portion produced but little beyond the base of the process.

"*Hab.* Sooloo Sea, East Indies."—*Dana.*

8. Cerapus Brasiliensis. (Plate XLV. fig. 8.)

Pyctilus Brasiliensis, *Dana, U. S. Explor. Exped.* p. 976. pl. 67. f. 5.

"Coxæ of moderate size. Lateral margin of head salient. First pair of gnathopoda rather large; carpus and propodos broad, and taken together oblong-oval, hirsute below; meros slightly the longer, rounded at the lower apex; propodos somewhat oblong; dactylos a little shorter than the propodos. Second pair of gnathopoda very stout; carpus very large, oblong, immoveable; dactylos stout, rather short, bidentate, the extremity of the carpal process not extended beyond the base of the dactylos; propodos thick, nearly twice as long as the dactylos, much hirsute below, hairs as long as the breadth of the joint. Third pair of perciopoda rather short, basos nearly orbicular, hairs longish, few; basos of seventh pair narrow. "Length 3 lines.

"*Hab.* Dredged with the anchor in the harbour of Rio Janeiro."—*Dana.*

9. Cerapus? fasciatus.

Cerapus fasciatus, *Stimpson, Marine Invert. Grand Manan*, p. 49. f. 35.

"*Female.*—Elongated. Cephalon narrow. Pereion very broad in the middle, where the height equals one-third of the breadth. Pleon very slender throughout its length, being about one-half the width of the pereion. Eyes rather large, rounded, black. Antennæ very slender, with long flagella; inferior arising much behind, and somewhat longer than, the superior, which are generally thickened at the base. Gnathopoda subcheliform, those of the second pair the larger. Perciopoda slender; first and second pairs having their basa oval; last pair longer than the others. Posterior pleopoda very long and slender; antepenultimate pair projecting beyond the others; last pair short and rather thick, each terminating in two short, curved processes. Colour wine-yellow, with narrow

transverse bands of dark reddish-brown, one to each segment on the back; the small coxæ of the last three pairs of pereiopoda are also dark brown.

"Length 0·32 inch.

"*Hab.* Dredged in 35 fathoms, on a gravelly bottom, in Hake Bay."—*Stimpson.*

Mr. Stimpson thinks that the degree of elongation and flexibility of the flagella of the antennæ is not a character of sufficient importance to separate this species from *Cerapus*.

Neither the figure that Stimpson gives of the caudal appendages, nor his description of the posterior pair of pleopoda, is sufficiently distinct to determine whether the latter appendage terminates in two short, curved rami, or in one ramus having two short, curved processes. I am inclined to think that this species is not a *Cerapus*.

10. Cerapus Leachii.

Podocerus Leachii, *Kröyer, Nat. Tidskr.* iv. p. 163.

"The eyes carried on prominent lobes. Superior antennæ almost as long as the inferior; flagellum of the inferior antennæ consisting of twelve articuli. First pair of gnathopoda having the propodos considerably dilated, rather longer than broad; second pair having the propodos very large: in the female the carpus is produced behind the propodos into a prominent tooth; in the male, on the contrary, the carpus becomes the *hand* and immoveable *finger*, whilst the propodos and dactylos together form an efficient *thumb*. First two pairs of pereiopoda subequal, having the basa and mera squamiformly dilated; third pair shorter than the others, basos scutiform. Dorsal surface smooth, and destitute of teeth. Coxæ ciliated or plumose.

"*Hab.* Taken in the Gulf of Codanus, in a membranous tube."

"The *female* of this species, by the form of the second pair of gnathopoda, is *Podocerus*" [*Dercothoë**]; "the male being a true *Erichthonius*" [*Cerapus*].—*Kröyer.*

6. SIPHONŒCETUS.

Siphonœcetus, *Kröyer, Nat. Tidskr.* i. p. 491; *Voyage en Scand.* pl. 20. fig. 1.

Spence Bate, Report Brit. Assoc. 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

White, Hist. Brit. Crust. p. 196.

Not laterally compressed. Superior antennæ in advance of the inferior; inferior longer than the superior, subpediform. Gnatho-

* *Vide* p. 259.

poda not large, subequal, subchelate; second pair rather the larger. Pereiopoda short, robust; posterior pair longest, coxæ small. Posterior pair of pleopoda very short, terminating in a single ramus formed like a double hook. Telson single; lobe crowned with several rows of sharp spines or teeth.

Krŏyer, in his figure of *Siphonoecetus typicus*, has the posterior pair of pleopoda double-branched, whereas, in the species that I have had the opportunity of examining closely, there is only one ramus; but that consists of two hooks. These hooks are not, as in *Amphithoë* and *Corapus*, at the extremity of the ramus, but are themselves the ramus, being united at the base.

1. **Siphonœcetus crassicornis.** (Plate XLV. fig. 9.) B.M.

Siphonœcetus crassicornis, *Spence Bate, Report Brit. Assoc.* 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 197.

Female.—Cephalon produced to a strong rostrum. Posterior division of the pleon compressed beneath the anterior. Eyes round, fixed on a lobe between the antennæ. Superior antennæ about one-fifth the length of the animal; first joint of the peduncle as long as the cephalon, very broad, armed above with a large strong process which extends beyond the extremity of the second joint; second joint short; third longer and more slender than the second; flagellum with two articuli, sparsely ciliated, first very long, second rudimentary. Inferior antennæ reaching a little beyond the superior, last two joints subequal; flagellum having two articuli, sparsely ciliated, first articulus as long as the last joint of the peduncle, second small. Gnathopoda subequal, having the propodos long-ovate, slightly tapering, palm not defined; dactylos serrated, impinging against the inferior margin. First two pairs of pereiopoda subequal, having the basos dilated; propodos curved; dactylos sharp and simply curved: third pair having each joint very short and dilated: meros and carpus posteriorly produced; propodos very stout, slightly curved; dactylos double-hooked, posteriorly directed: last two pairs gradually increasing in length, and terminating in double-pointed dactyla posteriorly directed. Penultimate pair of pleopoda short, scarcely reaching beyond the peduncle of the preceding; ultimate not reaching beyond the extremity of the antepenultimate, having the ramus developed into a double-pointed hook. Telson single; lobe crowned with small teeth directed upwards.

Length $\frac{5}{20}$ths of an inch

Hab. Small tubes attached to *Antennularia*, coast of Northumberland (*Mr. Alder*).

2. Siphonœcetus Whitei. (Plate XLV. fig. 10.) B.M.

Cerapus Whitei, *Gosse, Nat. Rambles Devonshire Coast*, p. 383. pl. 22. f. 12; *Marine Zool.* p. 140. f. 253.
White, Hist. Brit. Crust. p. 191.
Siphonœcetus Kröyeranus, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 196.

Without a rostrum. Superior antennæ one-fourth the length of the animal; first joint of the peduncle shorter than the cephalon, second and third about the same length; flagellum consisting of three articuli, first articulus rather longer than the last joint of the peduncle. Inferior antennæ but little longer than the superior. Gnathopoda subequal; propodos ovate, tapering, palm not defined; dactylos of the second pair serrated upon the inner margin. First two pairs of pereiopoda having the basa dilated, carpi broad, propoda curved, dactyla straight, styliform; third and fourth pairs subequal, having the carpi very short, propoda straight, dactyla double-pointed, anteriorly directed; posterior pair longer than the preceding, having the carpus as long as the propodos, and the dactylos double-pointed, posteriorly directed.

Length $\frac{4}{20}$ths of an inch.

Hab. Weymouth (*Prof. Williamson*); Ilfracombe, in tubes attached to tufts of *Chondrus crispus* (*Mr. Gosse*).

3. Siphonœcetus typicus. (Plate XLVI. fig. 1.)

Siphonœcetus typicus, *Kröyer, Nat. Tidskr.* i. p. 491; *Voyage en Scand.* pl. 20. f. 1.

Superior antennæ one-third the length of the animal, ciliated; first joint of the peduncle longer than the cephalon, second not so long as the first, third still shorter; flagellum scarcely longer than the last joint of the peduncle. Inferior antennæ having the peduncle reaching beyond the extremity of the superior antennæ; antepenultimate joint longer than the first joint of the superior pair, penultimate and ultimate joints subequal; flagellum not so long as the last joint of the peduncle, having the last articulus laterally tipped with two stout spines, and the antepenultimate tipped with one spine on the upper surface. First pair of gnathopoda long-ovate; palm armed with three sharp teeth or spines, the posterior of which defines its limit; dactylos scarcely half the length of the palm. Second pair of gnathopoda having the meros inferiorly produced nearly to the extremity of the carpus, carpus continuous with the propodos; propodos ovate, tapering, palm not defined, armed with several short teeth or spines; dactylos nearly as long

as the inferior margin. First two pairs of pereiopoda subequal: third and fourth subequal, shorter than the preceding; posterior pair longest. Posterior pair of pleopoda scarcely reaching beyond the telson.

Hab. Tubes built of stone, &c., cemented together. Scandinavia (*Kröyer*).

This description is dependent upon the correctness of Kröyer's figure.

7. NÆNIA, n. g.

Antennæ subequal; superior without a secondary appendage; inferior arising posteriorly to the superior. Gnathopoda subchelate; second pair very large. Pereiopoda strong, subequal. Posterior pair of pleopoda biramous, rami styliform. Telson tubular, tipped with one or two rudimentary denticles.

This genus differs from *Eurystheus* chiefly in the absence of the secondary appendage to the superior antennæ and in the larger size of the second pair of gnathopoda.

1. Nænia tuberculosa*, n. s. (Plate XLVI. fig. 2.)

Eyes small, round, red. Superior antennæ half as long as the animal, having the first joint stout and as long as the cephalon, second joint longer than the first and much slighter, third shorter than the first and more slender than the second; flagellum nearly as long as the last two joints of the peduncle. Inferior antennæ having the peduncle as long as the peduncle of the superior, last two joints subequal; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda having the carpus and propodos subequal; propodos ovate, palm oblique, imperfectly defined; dactylos long, slender, serrated on the inner margin. Second pair of gnathopoda having the carpus short and nearly as broad as the propodos; propodos long-quadrate, palm receding, tuberculated; dactylos extremely arcuate. First two pairs of pereiopoda having the meros long and carpus short; third pair having the basos excavate infero-posteriorly; fifth pair longer than the preceding. Posterior pair of pleopoda extending further than the preceding. Telson tubular.

Length $\frac{5}{20}$ths of an inch.

Hab. Plymouth, and Oxwich Bay, Glamorgan (*C. S. B.*); Tenby (*Mr. Webster*); Banff (*Mr. Edward*).

* The specific names in this genus refer to the character of the palm of the second pair of gnathopoda.

2. **Nænia rimapalma**, n. s. (Plate XLVI. fig. 3.) B.M.

Eyes round, black. Superior antennæ two-thirds the length of the animal. Inferior antennæ a little longer than the superior, peduncle reaching beyond the peduncle of the superior. First pair of gnathopoda slender; carpus as long as the propodos; propodos having the margins parallel, with no defined palm; dactylos as long as the propodos. Second pair of gnathopoda having the carpus short; propodos large, long-quadrate; palm oblique, imperfectly defined, having a deep central excavation, margin fringed with small bead-like protuberances; dactylos having an enlargement opposite the hollow in the palm. Pereiopoda subequal. Pleopoda subequal, the longest ramus tipped with a long cilium. Telson tubular, tipped with one or two minute denticles (microscopic).

Length $\frac{5}{20}$ths of an inch.

Hab. Coast of Northumberland (*Mr. Alder*).

3. **Nænia excavata**, n. s. (Plate XLVI. fig. 4.) B.M.

Female.—Eyes small, ovate. Antennæ (wanting). First pair of gnathopoda long and slender; carpus as long as the propodos; propodos but slightly broader at the palm than at the carpal extremity, not stouter than the carpus; palm oblique, short, and defined by an obtuse angle with the inferior margin; dactylos long, as long as the propodos, serrated on the inner margin. Second pair of gnathopoda large, robust, having the carpus short, and produced along the inferior margin of the propodos; propodos ovate, palm oblique, defined by a right angle which is suddenly formed by a deep excavation in the inferior limits of the palm; dactylos as long as the palm, serrated upon the inner margin. Posterior pleopoda not longer than the preceding. Telson cylindrical, carrying at the extremity two or three exceedingly minute denticles (microscopic) and a few hairs.

Length $\frac{5}{20}$ths of an inch.

Hab. Coast of Northumberland (*Mr. Alder*).

4. **Nænia undata**, n. s. (Plate XLVI. fig. 5.)

Eyes round. Superior antennæ half the length of the animal. Inferior antennæ not longer than the superior. First pair of gnathopoda having the carpus as long as the propodos; propodos ovate, tapering; palm very oblique, imperfectly defined, ciliated; dactylos internally serrated. Second pair of gnathopoda having the carpus shorter than the propodos, and produced along its inferior margin;

propodos ovate, palm oblique, waved, defined by two short spines; dactylos having the inner margin serrated. Posterior pair of pleopoda longer than the preceding. Telson tubular.

Length $\frac{5}{20}$ths of an inch.

Hab. Coast of Northumberland (*Mr. Alder*).

Subfamily 2. COROPHIIDES*.

Cephalon and pereion broader than deep. Inferior antennæ subpediform, longer and more powerful than the superior. Coxæ small. Posterior pair of pleopoda simply subfoliaceous or styliform, not armed with hook-like spines. Telson squamiform, unarmed.

8. CYRTOPHIUM.

Cyrtophium, *Dana, U. S. Explor. Exped.* p. 839.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.
White, Hist. Brit. Crust. p. 195.
Platophium, *Dana, U. S. Explor. Exped.* p. 838.

"Pereion narrow-elliptical. Pleon inflexed beneath the pereion. Cephalon subquadrate. Eyes situated at the anterior angles, and a little prominent. Antennæ pediform, with very short flagella or none; the inferior pair a little the longer. Gnathopoda subchelate; second pair much the stouter. Posterior pair of pleopoda minute, simple, partly concealed by the telson; antepenultimate and penultimate pairs with the rami unequal, not specially curved upon the outer side."—*Dana*.

I think that Dana's genera *Cyrtophium* and *Platophium* should be united, since the only distinctions which exist between them are the respective lengths of the rami of the pleopoda, the more lamellar form of the inner ramus of the antepenultimate and penultimate pairs and the greater length of their spines,—the fundamental characters of each being the same.

I have retained the name of *Cyrtophium* in preference to that of *Platophium*, since I had adopted the former for a European species previously to determining that the two were synonymous.

The above generic characters are taken from those given by Dana for the genus *Platophium*,—a short note, pointing out the slight differences, being the only description given of *Cyrtophium* as a genus.

* Section Tubifica.—On account of the close resemblance of the females of *Cerapus* (*Dercothoë*) to the animals belonging to the genus *Podocerus*, together with the circumstance that *Haploops*, Liljeborg (a genus belonging to the subfamily Ampeliscades, which I received too late to arrange in its proper place in this Catalogue), dwells in tubes, I think that the sections Nidifica (see p. 233) and Tubifica are unnecessary and should be cancelled, as being of too arbitrary a character. In classification, it is better to rely upon the structure than upon the habits of animals.

1. Cyrtophium Brasiliense. (Plate XLVI. fig. 6.)

Platophium Brasiliense, *Dana, U. S. Explor. Exped.* p. 838. pl. 55. f. 9.

"*Male*.—Body (seen from above) narrow-elliptical. Antennæ ciliate below: upper shorter than base of lower; flagellum three- to five-articulated: lower pair a little longer than half the body; flagellum three-articulated. First pair of gnathopoda furnished with a small propodos: propodos of second pair short, oblong, nearly straight below, and thickly furnished with very fine, long plumose hairs, longer than the breadth of the meros; carpus slightly oblong, not produced below; propodos much produced below anteriorly. Pereiopoda subequal; setæ short, rather few, not longer than diameter of propoda.

"*Female*.—Body more broadly elliptical, and the antennæ a little shorter than in the male; the upper pair a little longer than the base of the lower. Propodos of second pair of gnathopoda of moderate size, broad, and but little oblong, arcuate below and hirsute, but not furnished with long hairs like the male; carpus not oblong.

"Length, with the pleon inflexed, about 2 lines; with it extended, 3 lines.

"*Hab.* Dredged in the harbour of Rio Janeiro."—*Dana*.

2. Cyrtophium orientale. (Plate XLVI. fig. 7.)

Cyrtophium orientale, *Dana, U. S. Explor. Exped.* p. 839.

"Antennæ pediform, ciliate below: inferior pair having a flagellum consisting of three articuli, the second and third being very small; the first long-styliform, longer than the joint of the peduncle next preceding: superior antennæ having a flagellum consisting of three subequal articuli, which together are as long as the third joint of the peduncle; cilia below very long. Propodos of second pair of gnathopoda quite stout, subelliptical, nearly straight below, and hirsute; dactylos very nearly as long as the propodos. Antepenultimate and penultimate pairs of pleopoda with very long spines at their extremity (one being nearly as long as the branch); inner branch lamellar, having its inner margin spinulose; outer branch shorter than inner, and subterete.

"Length 2 lines.

"*Hab.* Singapore, East Indies."—*Dana*.

3. Cyrtophium Darwinii. (Plate XLVI. fig. 8.) B.M.

Cyrtophium Darwinii, *Spence Bate, Brit. Assoc. Report*, 1855, p. 59; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
White, Hist. Brit. Crust. p. 196.

Dorsal aspect of the cephalon quadrate. Pereion and pleon having

the posterior margin of each segment dorsally elevated, giving the animal a corrugated or imbricated appearance. Eyes prominent. Superior antennæ not so long as the peduncle of the inferior. Inferior antennæ nearly as long as the animal; flagellum shorter than the last joint of the peduncle. First pair of gnathopoda small: second large, having the carpus very minute; propodos as long as the cephalon and the first two segments of the pereion. Two posterior pairs of perciopoda subequal, long. Antepenultimate pair of pleopoda having the rami subequal; penultimate much shorter than the preceding, with the rami unequal; ultimate rudimentary, scarcely extending beyond the extremity of the telson. Telson squamiform, suborbicular.

Length $\frac{3}{20}$ths of an inch.

Hab. Dredged at Falmouth; St. Michael's Mount, on the beach, at low water (*Mr. Webster*).

4. Cyrtophium tuberculatum. (Plate XLVI. fig. 9.)

Lætmatophilus tuberculatus, *Bruzelius, Skand. Amph. Gamm.* p. 11. pl. 1. f. 1.

"Antennæ equal. First pair of gnathopoda having the propodos ovate, and less than that of the second. Second pair of gnathopoda, in the male, having the propodos oblong-ovate, palm arcuate, inferior margin nearly straight; in the female, the propodos is oval. Telson single, foliaceous, rounded at the apex. Dorsum furnished with small tubercles.

"Length $\frac{1}{20}$ths of an inch.

"*Hab.* Rather rare in the bays of Bohusia, *e. g.* Gullmarsfjorden, and at the island called Koster, where it was taken at the depth of from 120 to 130 fathoms."—*Bruzelius.*

9. CRATIPPUS, n. g.

Body long. Antennæ short; flagella rudimentary; superior pair without any secondary appendage. Coxæ not so deep as the pereion. Gnathopoda subchelate; second pair having the propodos much larger than that of the first. Perciopoda subequal. Three posterior pairs of pleopoda having short rami. Telson squamiform(?).

The rudimentary character of the flagella of the antennæ, the absence of the secondary appendage, and the shortness of the coxæ are characters that separate this genus from *Podocerus*; the size and form of the second pair of gnathopoda distinguish it from *Corophium*; and the shortness of the antennæ and relative proportions of the gnathopoda separate it from *Dryope* and *Unciola*.

1. **Cratippus tenuipes**, n. s. (Plate XLVI. fig. 10.) B.M.

Eyes round, black. Antennæ subequal: superior pair about one-fourth the length of the animal; first joint robust, second and third gradually smaller; flagellum rudimentary, consisting of but three articuli: inferior pair having the last three joints of the peduncle gradually decreasing in length; flagellum rudimentary, consisting of only three articuli. First pair of gnathopoda slender, long, scarcely subchelate: second pair having the carpus short; propodos long, as long as the cephalon and first segment of the pereion, with the superior and inferior margins parallel: on the right side, the inferior angle is formed into a hollow cup: on the left are two short distal teeth. Pereiopoda subequal, very long and slender, basa not dilated; propoda of the three posterior pairs serrated on the inner margin.

Length $\frac{3}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*).

10. DRYOPE, n. g.

Unciola, *Gosse, Marine Zool.* i. p. 141 (not *Say*).

Animal long and slender. Superior antennæ without a secondary appendage; inferior antennæ not longer than the superior. Coxæ not so deep as the pereion. First pair of gnathopoda larger than the second, subchelate; second pair small, imperfectly chelate. Posterior pair of pereiopoda longer than the others. Posterior pair of pleopoda short, almost rudimentary, double-branched. Telson single, squamiform.

This genus differs from *Unciola* of Say in the absence of a secondary appendage to the superior antennæ, in the form of the second pair of gnathopoda, in the shortness of the posterior pair of pleopoda, and in the character of the telson.

1. **Dryope irrorata.** (Plate XLVII. fig. 1.) B.M.

Unciola irrorata, *Gosse, Marine Zool.* i. p. 141. f. 256 (not *Say*).

Posterior margin of the second and third segments of the pleon waved. Eyes round, small. Superior antennæ nearly half the length of the animal; flagellum not longer than the last joint of the peduncle. Inferior antennæ scarcely shorter than the superior; the peduncle slightly shorter than the peduncle of the superior; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda larger than the second, having the carpus continuous with the propodos, the postero-inferior angle produced to a blunt, posteriorly-

directed tooth tipped with hairs; propodos triangular, superior margin arcuate; palm oblique, extending the entire length of the inferior margin, deeply waved, having two prominent lobes, and defined by a prominent obtuse tooth; dactylos scarcely as long as the palm, serrated upon the inner margin. Second pair of gnathopoda small; propodos scarcely broader than the carpus, and as long again as broad, having the superior margin arcuate, the inferior nearly parallel with it, and both fringed with fasciculi of hairs; palm concave, fringed with slight, equally distant prominences, from each of which arises a solitary straight cilium; the inferior angle produced, against which the short straight dactylos impinges. Three posterior pairs of perciopoda subequal.

Length $\frac{5}{20}$ths of an inch.

Hab. Weymouth (*Gosse*).

Mr. Gosse considers this species to be *Unciola irrorata* of Say; but, independently of its possessing characters which separate it generically from *Unciola*, the animal differs in other respects from Say's description.

2. **Dryope crenatipalma**, n. s. (Plate XLVII. fig. 2.) B.M.

Cephalon having a very short rostrum between the antennæ. Infero-posterior angle of the first three segments of the pleon posteriorly produced. Eyes round, black. Superior antennæ half as long as the animal; second joint of the peduncle twice as long as the first; flagellum as long as the second and third joints of the peduncle. Inferior antennæ having the peduncle as long as the peduncle of the superior; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda having the carpus inferiorly produced to a point; propodos subtriangular, superior margin arcuate; palm nearly the entire length of the inferior margin, very oblique, defined by a prominent tubercle tipped with a strong spine, irregularly waved, having a very wide protuberance, with the margin minutely crenulate; dactylos as long as the palm, having the inner margin serrated. Second pair of gnathopoda having the carpus nearly as long as the propodos, with the inferior margin slightly produced and tipped with plumose cilia; propodos half as long again as broad, ovate; palm concave, the deepest part being near the dactylos, ornately fringed near the base of the dactylos with simple sharp-pointed perpendicular teeth, then with two or three tubercles crowned with teeth spreading like a fan, and lastly with seven or eight long comb-like teeth just within the limits of the produced inferior angle of the palm, the last of which is double

the length and size of the others; dactylos strongly serrated upon the inner margin. Three posterior pairs of perciopoda subequal, the propodos having the inner distal angle produced to a lobe; dactylos robust, arcuate. Fourth pair of pleopoda having the outer ramus longer than the inner; last pair scarcely reaching beyond the telson. Telson almost circular, having a slight point at the apex.

Length $\frac{6}{20}$ths of an inch.

Hab. Weymouth (*Gosse*).

The above description is taken from a female presented to me by Mr. Gosse.

11. UNCIOLA.

Unciola, *Say, Journ. Acad. Nat. Sci. Philad.* i. p. 389.
Edwards, Ann. des Sc. Nat. xx. p. 383; *Hist. des Crust.* iii. p. 69.
Glauconome, *Kröyer, Nat. Tidskr.* i. p. 501.

"Cephalon deeply emarginate beneath the eyes to receive the basal joints of the inferior antennæ, and projecting into an acute angle between the superior antennæ. Eyes slightly prominent, placed on a somewhat advanced portion of the cephalon, between the bases of the superior and inferior antennæ. Antennæ robust, subpediform; superior pair having an articulated flagellum and a secondary appendage; inferior pair shorter. Coxæ not dilated. First pair of gnathopoda large, monodactyle; second pair adactyle, having the carpus and propodos subequal. Posterior pair of perciopoda longest. Antepenultimate and penultimate pairs of pleopoda styliform; ultimate pair suborbicular, terminating with a pair of simple, depressed, styliform rami*."—*Condensed from Say.*

"Antennæ subpediform; superior pair furnished with a very small secondary appendage. Eyes minute, not very distinct. First pair of gnathopoda subcheliform; second pair more slender, not subchelate. First and second pairs of perciopoda very slender; third, fourth and fifth slender, with the basa dilated. Three anterior pairs of pleopoda short, but very robust, formed for swimming, the fourth and fifth pairs for leaping, the sixth pair (nearly rudimentary) for swimming. Coxæ very minute, almost rudimentary."—*Abbreviated from Kröyer.*

I think there can be little doubt that Kröyer's genus *Glauconome* is synonymous with *Unciola* of Say, which is also the opinion of Dana; but not having seen an authenticated specimen of this genus,

* Say's description is: "terminal one suborbicular, with a pair of simple, depressed styles, concealed by others."

I have thought it advisable to give the description by both authors, the more especially as, from the indefiniteness of the term 'adactyle' of Say, and no reference being made by either of them to the form of the telson, it is not improbable that this genus may also be synonymous with *Microdentopus*.

1. Unciola irrorata.

Unciola irrorata, *Say, Journ. Acad. Nat. Sci. Philad.* i. p. 389.
Edwards, Ann. des Sc. Nat. xx. p. 383; *Hist. des Crust.* iii. p. 69.

"Having each segment of the pleon mucronate upon each side behind. Eyes hemispherical, prominent. Superior antennæ having the secondary appendage reaching the fifth articulus of the flagellum. First pair of gnathopoda having the propodos with a longitudinally convex palm defined by a prominent obtuse tooth; dactylos reaching the carpus, which terminates so as to appear like a second tooth of the *hand*. Second pair of gnathopoda compressed, ciliated, having the propodos subtriangular. Colour, when recent, pale, with very numerous red points.

"Length $\frac{3}{10}$ths of an inch.

"*Hab.* Egg Harbour, coast of the United States."—*Condensed from Say.*

2. Unciola leucopes. (Plate XLVII. fig. 3.)

Glauconome leucopes, *Kröyer, Nat. Tidskr.* i. p. 491 *et seq.* pl. 7. f. 2; *Voyage en Scand.* pl. 19. f. 1 *a*.

Eyes small. Superior antennæ nearly half the length of the animal; joints of the peduncle subequal, the first as long as the cephalon. Inferior antennæ shorter than the superior, having the peduncle as long as the peduncle of the superior; flagellum as long as the last joint of the peduncle. First pair of gnathopoda having the propodos ovate, tapering, palm imperfectly defined; dactylos long. Second pair of gnathopoda having the propodos long, not broader than the carpus.

Hab. South Greenland (*Kröyer*).

12. COROPHIUM.

Corophium, *Latr. Gen. Crust.* i. p. 58.
Leach, Edinb. Encycl. vii. p. 403; *Linn. Trans.* xi. p. 362.
Desmarest, Consid. sur les Crust. p. 270.
Gosse, Marine Zool. i. p. 141.
Bruzelius, Skand. Amph. Gamm. p. 14.

Superior antennæ small, situated close together in advance of and above the inferior, having a multiarticulate flagellum. Inferior antennæ very large and powerful, subpediform; flagellum not

multiarticulate. First pair of gnathopoda subchelate; second pair not subcheliform. Posterior pair of pleopoda very short, single-branched. Telson squamiform, simple.

1. Corophium longicorne. (Plate XLVII. fig. 4.) B.M.

Corophium longicorne, "*Latreille, Gen. Crust. et Ins.* i. p. 59."*
"*Lamarck, Hist. des Anim. sans Vert.* v. p. 184."
Leach, Edinb. Encycl. vii. p. 403; *Linn. Trans.* xi. p. 362.
Desmarest, Consid. sur les Crust. p. 270. pl. 46. f. 1.
Brébisson, Cat. des Crust. recueillis dans le Dépt. du Calvados, 1825.
"*Guérin, Icon.* t. 27. f. 1."
Edwards, Ann. des Sc. Nat. xx. p. 385; *Hist. des Crust.* iii. p. 66.
Bruzelius, Skand. Amph. Gamm. p. 15.
"Gammarus longicornis, *Fabricius, Ent. Syst.* ii. p. 515."
"*Roemer, Gen. Ins.* tab. 33. f. 6."
"Astacus linearis, *Penn. Brit. Zool.* edit. 1777, iv. p. 17. pl. 16. f. 31."
"Oniscus volutator, *Pallas, Spic. Zool.* ix. p. 59. tab. 4. f. 9."
"Cancer grossipes, *Linn. Syst. Nat.*"

Male.—Eyes small, round, not distant, advanced to the anterior margin of the cephalon. Superior antennæ reaching to half the length of the penultimate joint of the peduncle of the inferior; first joint of the peduncle serrated on the inner inferior margin. Inferior antennæ longer than the entire animal; penultimate joint of the peduncle armed with a strong anteriorly-directed tooth on the inferior distal extremity; flagellum consisting of only two articuli, the apical articulus being much shorter than the preceding. First pair of gnathopoda small, having the carpus and propodos subequal, long; propodos slightly increasing towards the distal extremity, palm somewhat convex, armed with several equidistant submarginal hairs, the inferior angle slightly in advance; dactylos arcuate, impinging on the palm in its entire length. Second pair of gnathopoda having the meros arcuate beneath, and produced along the entire inferior margin of the carpus, fringed with two or three rows of long plumose hairs; propodos having the margins parallel, with a row of long plumose hairs; dactylos long, sharp, unguiculate. Two anterior pairs of pereiopoda having long straight dactyla; third and fourth pairs scarcely longer than the preceding, fifth pair nearly as long again. Posterior pair of pleopoda scarcely extending beyond the telson, having the ramus foliaceous, nearly as broad as long, furnished with a few hairs. Telson broad, triangular, apex obtuse.

Length $\frac{6}{20}$ths of an inch.

Hab. Loughor Marsh, Glamorgan (*C. S. B.*); Berwick (*Dr. John-*

* I am indebted to White and Edwards for the synonyms and references within *inverted commas*.

ston); Moray Frith (*Rev. G. Gordon*); Norfolk and mouth of the Medway (*Leach*); coast of Saintonge (*Quatrefages*); Bay of L'Aiguillon, Rochelle (*M. D'Orbigny*); coasts of Sweden and Norway (*Bruzelius*). In muddy estuaries probably all round the British shores.

In the month of July 1858 I took several specimens, along with *Podocerus*, amongst weed attached to a buoy in Plymouth Sound.

The colour of this little animal is grey, the tint being produced by black stellate markings on a whitish ground: it assimilates very closely in hue to the soil in which it resides. It dwells in small tubular galleries in the mud; but I have not ascertained whether it perforates these channels, or occupies them after they have been excavated by the annelides on which it preys. Quatrefages, in his 'Rambles of a Naturalist' (vol. ii. p. 312, English translation), says that "about the end of April they come from the open sea in myriads (they are called '*Pernis*' by the fishermen of the coast of Saintonge), to wage war with the annelides, which they entirely destroy before the end of May. They then attack the mollusca and fish all through the summer, and disappear in a single night about the end of October and return again the following year."

2. **Corophium spinicorne**, n. s. (Plate XLVII. fig. 5.) B.M.

Female.—Cephalon having a central projection between the antennæ; the lateral margins advanced anteriorly as far as the central point. Eyes distant from each other, and near the outer margin of the cephalon. Superior antennæ broad at the base, and nearly half the length of the animal; first joint of the peduncle long-ovate, and armed with three strong spines on the inner side at the base; second joint much narrower than, and not half the length of, the first; third joint very small; flagellum nearly as long as the peduncle. Inferior antennæ scarcely longer than the superior; second joint of the peduncle broader than long, internally having a tubercle crowned with a short straight spine; third joint as broad as long, internally having a tubercle crowned with three spines; fourth joint reaching to the extremity of the second of the peduncle of the superior, as broad as the preceding, and anteriorly produced upon the inner side to a blunt process or tooth; the internal margin of the joint is armed with stiff spines, which are directed laterally near the base, but gradually diverge until the anterior ones are pointed nearly straight forwards: the fifth joint is about half the length of the fourth, but much narrower; the flagellum is uniarticulate, and tipped with several small spines. The rest of the animal differs but slightly from that of *C. longicorne*.

Length $\frac{1}{20}$ths of an inch.

Hab. Plymouth (*Mrs. Hudson*); Yarmouth (*Mr. Jeffreys*); Cumbrae (*Mr. Robertson*).

For a long time I considered this species to be the female of *C. longicorne*; but, until we have definite evidence as to their natural relation to each other, it had better be described as a separate species, particularly as it appears to be more rare, and I have never received them from the same localities.

3. Corophium Bonellii.

Corophium Bonellii, *Edwards, Ann. des Sc. Nat.* xx. p. 385; *Hist. des Crust.* iii. p. 67.

"This species is smaller than *C. longicorne*, and is distinguished from it by the form of the third joint of the inferior antennæ [antepenultimate joint of the peduncle], which presents no dental process at its extremity, and by the existence of two large spines at the inferior edge of the basal joint of the superior antennæ.

"*Hab.* ——?"—*M.-Edwards.*

4. Corophium contractum.

Corophium contractum, *Stimpson, Proc. Acad. Nat. Sci. Philad.* May and June, 1855.

"Antennæ equal in length, which is one-fourth that of the body; superior antennæ with four-articulate flagella; inferior antennæ very thick, with minute terminal articuli. Posterior pair of pereiopoda rather long, with long plumose setæ along the edges of the basa. Colour yellowish. Eyes black.

"Length $\frac{1}{4}$ of an inch.

"*Hab.* Japan."—*Stimpson.*

5. Corophium Acherusicum.

Corophium Acherusicum, *Costa, Rend. della Reale Accad. delle Scienze di Napoli*, p. 178.

"*Male.*—Superior antennæ short and slender; inferior nearly as long as the animal, the penultimate joint of the peduncle having the inferior distal extremity armed with two or three curved spines.

"*Female.*—Antennæ shorter and unarmed. Second pair of gnathopoda having the dactylos bidentate.

"Length 2 lines.

"*Hab.* Naples."—*Costa.*

6. Corophium crassicorne. (Plate XLVII. fig. 6.)

Corophium crassicorne, *Bruzelius, Skand. Amph. Gamm.* p. 15. pl. 1. f. 2.

"Cephalon furnished with a more or less acute, small rostrum. Three

posterior segments of the pleon fused together (*coalita*). First pair of gnathopoda having the dactylos longer than the palm of the propodos, and, in the second pair, armed with an acute tooth. First and second pairs of perciopoda having the dactyla equalling in length the carpi and propoda conjointly. Posterior pair of pleopoda having the rami oval.

"Length about 4 millim.

"*Hab.* On the eastern shores of Sweden, from the most northerly point to Bohusia: rare."—*Bruzelius.*

7. Corophium affine.

Corophium affine, *Bruzelius, Skand. Amph. Gamm.* p. 17.

"Cephalon having the anterior margin truncate, scarcely showing a rostrum. Three posterior segments of the pleon not fused together. First pair of gnathopoda having the dactylos longer than the palm of the propodos, and, in the second pair, armed with a tooth. First and second pairs of perciopoda having the dactyla longer than the carpi and propoda conjointly. Posterior pair of pleopoda having the rami narrow, nearly linear.

"Length about 4 millim.

"*Hab.* In the Gulf of Gullmarsfjorden, Bohusia: very rare."—*Bruzelius.*

8. Corophium? quadriceps. (Plate XLVII. fig. 7.)

Corophium? quadriceps, *Dana, U. S. Explor. Exped.* p. 836. pl. 55. fig. 8.

"Body depressed, linear; head quadrate. Pleon posteriorly rounded. Antennæ subequal: superior a little the smaller; flagellum having four articuli; first joint of the peduncle longest: inferior rather stout, one-fourth as long as the body; penultimate joint of the peduncle longest; the three articuli of the flagellum quite short and subequal. Gnathopoda similar, the first pair the smaller. Third pair of perciopoda shorter than the second, basos not setigerous; fifth pair long and slender, basos setigerous on its posterior margin, setæ rather long and plumose.

"Length nearly 1 line.

"*Hab.* Harbour of Rio Janeiro, near the city; collected December 22, 1838."—*Dana.*

The doubt that is attached to the relation this species holds to the genus is dependent upon the form of the second pair of gnathopoda.

13. CLYDONIA.

Clydonia, *Dana, U. S. Explor. Exped.* p. 834.

"Body elongate, somewhat depressed. Pleon six- to seven-articulate. Eyes small. The two antennæ long-styliform, straight, consisting of a short basal joint and a long, rigid, subulate extremity, obsoletely multiarticulate. Feet slender; six posterior long, filiform; fifth longest."—*Dana.*

The author does not state which pair of antennæ are absent. The superior pair are probably rudimentary.

1. Clydonia gracilis. (Plate XLVII. fig. 8.)

Clydonia gracilis, *Dana, U. S. Explor. Exped.* p. 834. pl. 55. f. 6.

"Two antennæ about as long as the body, subulate. Eyes small, with nine lenses. Three posterior pairs of pleopoda terminating with slender rami; the antepenultimate and ultimate pairs longer than the penultimate, having a short acute branch [spine?] near the middle. Third pair of pereiopoda as long as the body; basos very long, minutely spinulose below: fifth pair less than half the length of the third.

"Length 3 lines.

"*Hab.* Atlantic Ocean, latitude 1° N., longitude 18° W. Collected October 31, 1838."—*Dana.*

2. Clydonia longipes. (Plate XLVII. fig. 9.)

Clydonia longipes, *Dana, U. S. Explor. Exped.* p. 835. pl. 55. f. 7.

"Similar to *C. gracilis.* The antennæ nearly as long as the body, a little stouter than in *C. gracilis*, obsoletely multiarticulate. Fifth pair of pereiopoda more than half the length of the third. Two anterior segments of the pleon with the posterior angles acute, and not truncate.

"Length 4 to 5 lines.

"*Hab.* Pacific Ocean, latitude 18° 10′ S., longitude 126° W. Collected August 8, 1839."—*Dana.*

14. ICILIUS.

Icilius, *Dana, U. S. Explor. Exped.* p. 844.

"Body much compressed. Antennæ elongate, and having long flagella; the inferior pair longest. Gnathopoda not prehensile, vergiform and unguiculate. Posterior pairs of pleopoda furcate."—*Dana.*

1. Icilius ellipticus. (Plate XLVII. fig. 10.)

Icilius ellipticus, *Dana, U. S. Explor. Exped.* p. 844. pl. 56. f. 4.

"Cephalon short, broad, triangular, front and side angles obtuse. Pereion oval; first segment narrow and very short. Pleon seven-jointed; three anterior segments at the middle of the posterior margin acutely prolonged. Eyes very remote. Antennæ subterete: inferior longer than the body; flagellum about twice as long as the base, very slender: superior nearly half shorter; flagellum not twice as long as the base. Gnathopoda densely hirsute on the inner or anterior side of the last two or three joints. Three posterior pairs of pereiopoda similar; the fifth much longer than the fourth. Telson small, ovate.

"Length 2 lines.

"Balabac Passage, north of Borneo; brought up on corallines in 31 fathoms."—*Dana.*

Fam. 4. CHELURIDÆ.

This family was founded by Professor Allman for the reception of a single species. The Cheluridæ are distinguished from the Corophiidæ by the fusion together of several segments of the pleon, and by the abnormal character of the three posterior pairs of pleopoda of the only species known.

1. CHELURA.

Chelura, *Philippi, Wiegmann's Archiv*, 1839.
Allman, Ann. Nat. Hist. xix. p. 361. pl. 13.

Superior antennæ having a multiarticulate flagellum, and carrying a secondary appendage; inferior antennæ much longer than the superior, very robust and powerful, having the flagellum with all the articuli fused together. Mandibles with an appendage; maxillipeds unguiculate. Gnathopoda chelate, subequal. Pereiopoda short, subequal. Penultimate pair of pleopoda having the peduncle developed into a squamose plate supporting two rami; ultimate pair unibranched. Telson single.

1. Chelura terebrans. (Plate XLVIII. fig. 1.) B.M.

Chelura terebrans, *Philippi, Wiegmann's Archiv*, 1839.
Allman, Ann. Nat. Hist. xix. p. 13.
Spence Bate, Brit. Assoc. Report, 1855.
White, Hist. Brit. Crust. p. 202.
Gosse, Marine Zool. i. p. 138. f. 250.
Nemertes nesæoides, *White, Cat. Crust. B. M.* 1847.

Male.—Third segment of the pleon armed with a large centro-dorsal

tooth. Eyes small, round, distant. Superior antennæ scarcely longer than the peduncle of the inferior; peduncle having the joints subequal; flagellum shorter than the peduncle, stout, having six articuli; secondary appendage slender, minute. Inferior antennæ about half the length of the percion, each succeeding joint of the peduncle increasing in length and diameter, furnished with long hairs; flagellum long-elliptic, laterally compressed, thickly fringed with long hairs. First pair of gnathopoda chelate, having the carpus shorter than the propodos; propodos oblongo-quadrate, margins almost parallel, infero-anterior angle produced anteriorly to less than a right angle, palm straight; dactylos capable of impinging at the apex only. Second pair of gnathopoda having the carpus longer than the propodos; propodos not broader than the carpus, having the antero-inferior angle produced anteriorly to an acute angle, which, with the short curved dactylos, forms a perfect chela. Three posterior pairs of pereiopoda having the basa not broadly developed; the mera broadly developed posteriorly; propoda armed with short, strong spines on the anterior margin. First three pairs of pleopoda short, having their basal joints squamosely developed, and furnished with two hooked spines and a few plumose cilia; antepenultimate pair having the peduncle long and the rami short; penultimate pair having the peduncle developed into a broad squamose plate, the rami short, equal in length, but unequally broad; ultimate pair having the peduncle short and the ramus long. Telson pedunculated and broadly lanceolate.

Female.—The large dorsal tooth upon the third segment of the pleon is much shorter than in the male, and straight. The peduncle of the penultimate pair of pleopoda has the squamose plate more quadrate, and the ramus of the posterior pair of pleopoda much shorter.

Length of male $\frac{7}{20}$ths, of female $\frac{6}{20}$ths of an inch.

Hab. In submarine timber, being one of its most destructive agents. It is found associated with *Limnoria lignorum*, probably all round Europe. Plymouth (*C. S. B.*); Polperro (*Mr. Loughrin*); Falmouth (*Rev. A. M. Norman*); Dublin Bay (*Messrs. Mullins, Ball*, and *Thompson*); Ayrshire (Ardrossan) (*Major Martin* and *Rev. A. M. Norman*); Britain (*Dr. Leach*); Trieste (*Prof. Philippi*).

Division HYPERINA.

The antennæ are more or less abnormal. The maxillipeds are imperfectly developed, and cover the oral appendages as an imperfect operculum. The gnathopoda are generally small and less powerful than the pereiopoda, and vary in the different families from quite simple to complexly chelate. The pereion has the segments separate, or one or more fused together. The pleon has the appendages upon the same type as in the GAMMARINA, but their forms are more liable to generic variation.

This division is synonymous with Milne-Edwards's family of HYPÉRINÉS, and also with Dana's family of HYPERIDEA. It contains four families.

Fam. 1. HYPERIDÆ.

The superior antennæ are formed with a distinct peduncle and flagellum; the former consists of three joints, the latter is variable. The inferior antennæ consist of a peduncle and flagellum; the peduncle is five-jointed (?), the flagellum multiarticulate. Gnathopoda more or less complexly subchelate. Four anterior pairs of pereiopoda subequal, normal. Three anterior pairs of pleopoda normal; three posterior pairs broad, flat, and biramous.

This family is remarkable for its thin integument and freedom from hairs.

1. LESTRIGONUS.

Lestrigonus, *Edwards, Ann. des Sc. Nat.* xx. p. 392; *Hist. des Crust.* iii. p. 81.

Cephalon large, deeper than broad. Pereion short; segments subequal, three times as deep as long. Pleon longer than the pereion; first three segments long and deep; fifth very short. Eyes large, occupying the entire lateral walls of the cephalon. Antennæ longer than the cephalon, subequal, having articulate flagella. Mandibles having an appendage. Gnathopoda completely subchelate. Pereiopoda subequal. Pleopoda biramous. Telson squamiform, simple.

1. **Lestrigonus exulans.** (PLATE XLVIII. fig. 2.) B.M.

Lestrigonus exulans, *Kröyer, Grönl. Amfip.* p. 68. f. 18.
Edwards, Hist. des Crust. iii. p. 82.

Cephalon transversely ovate; antero-inferior margin slightly excavated to receive the inferior antennæ. Antennæ reaching to about the third or fourth segment of the pereion: superior pair having the peduncle very short; second and third joints shorter than the

third; first articulus of the flagellum longer than the peduncle and as broad near the base, but gradually decreasing; all the other articuli are short and slender, shorter than broad near the base, but slightly increasing until they are longer than broad towards the extremity. Inferior antennæ a little shorter than the superior; peduncle longer than that of the superior; the last joint is longer than the two preceding and terminates truncately, having the inferior distal margin anteriorly produced; flagellum having the first articulus nearly as long as the last joint of the peduncle, commencing nearly as broad, but suddenly and immediately narrowing to half the diameter; all the other articuli are short and slender, commencing as broad as long, and gradually increasing in length until each articulus is nearly three times as long as broad. Mandibles having a three-jointed naked appendage; last joint longest. Gnathopoda subequal, small: first pair having the meros and carpus inferiorly produced and tipped with several stiff spines; propodos narrow, tapering, the inferior margin serrated, the serrature being formed by a series of teeth, each consisting of three, closely applied, and increasing in length anteriorly; dactylos slightly curved, sharp, and armed upon the inner side with a serrature similar to that on the inferior margin of the propodos, but less regular. Second pair of gnathopoda much resembling the first, but having the carpus a little more infero-anteriorly produced; the propodos slightly longer, and having the armature on the inferior margin less conspicuous, as also upon the dactylos. Pereiopoda subequal in size and length. Antepenultimate pair of pleopoda having the rami subequal, nearly as long as the peduncle: penultimate pair shorter than the preceding, and not longer than the peduncle of the ultimate; rami subequal, and as long as the peduncle: ultimate pair having the inner margin of the peduncle slightly serrated; rami subequal, half as long as the peduncle. Telson ovate, nearly half the length of the peduncle of the posterior pair of pleopoda.

Length $\frac{7}{20}$ths of an inch.

Hab. Carrickfergus (*Prof. Kinahan*); Greenland (*Kröyer*).

The antennæ in the British specimen are slightly longer than those figured by Kröyer, and the inferior pair have the peduncle truncated instead of being slender and tapering to the flagellum; but Kröyer's figure not being carefully drawn, I am inclined to believe that they are the same species, and that these slight differences are owing to the inaccuracy of the artist.

I am indebted to Professor Kinahan for this and the following species.

2. **Lestrigonus Gaudichaudii.** (Plate XLVIII. fig. 3.)

Hyperia Gaudichaudii, *Edwards, Hist. des Crust.* iii. p. 77.

Cephalon transversely ovate. Superior antennæ reaching to the fourth or fifth segment of the pereion; first joint of the peduncle short, but longer than the second and third together; first articulus of the flagellum twice as long as the peduncle, and tapering to the distal extremity, the other articuli of the flagellum being short—those near the base not longer than broad. Inferior antennæ a little shorter than the superior; the peduncle concealed as far as the extremity of the fourth joint; fifth joint slightly curved, and reaching to the extremity of the peduncle of the superior antennæ: first articulus of the flagellum as long as the last joint of the peduncle; the remaining articuli, being very short, resemble those of the superior antennæ. First pair of gnathopoda small, having the carpus and meros but slightly produced inferiorly, and the antero-inferior margin fringed with hairs; propodos of the same length as the carpus, much narrower, and almost cylindrical; dactylos very short—too short to antagonize with the produced extremity of the carpus. Second pair of gnathopoda rather longer than the first, and having the carpus and meros more produced than those of the first; propodos scarcely longer than the carpus, not half its width, and having the superior and inferior margins fringed with hairs; dactylos about half the length of the propodos, and capable of reaching the extremity of the produced carpus. Pereiopoda subequal and tolerably robust. Antepenultimate and penultimate pairs of pleopoda short, subequal: ultimate pair longer, the peduncle extending to the extremity of the preceding pair; rami half the length of the peduncle. Telson broadly lanceolate.

Length $\frac{11}{20}$ths of an inch.

Hab. Chili (*M. Gaudichaud*).

I have taken the description and figure from a single specimen in the collection so courteously entrusted to me by Professor Milne-Edwards. It is labelled *Hyperia Gaudichaudii*, and not having seen any other specimen in the collection of the Jardin des Plantes, I assume this to be the type from which the author drew up the original description. It closely resembles *L. exulans*, but may be at once recognized by the distinct armature on the propoda of the gnathopoda.

3. **Lestrigonus Kinahani,** n. s. (Plate XLVIII. fig. 4.) B.M.

Antennæ subequal, as long as the animal. Superior pair having the

peduncle nearly as long as the cephalon; first joint longer than the other two: first articulus of the flagellum longer than the peduncle, tapering, and fringed upon the inferior margin with fine hairs; the remaining articuli (after the two or three immediately succeeding the first) very long (many times longer than broad) and very slender. Inferior pair having only the last three joints of the peduncle exposed, reaching beyond the peduncle of the superior; the last joint not having the infero-distal extremity produced; first articulus of the flagellum suddenly and considerably narrowing to half the diameter, which is the same as that of the superior. The rest of the animal very closely resembles *L. exulans*, except in there being a less conspicuous inequality between the ultimate and two preceding pairs of pleopoda.

Length $\frac{9}{20}$ths of an inch.

Hab. Carrickfergus (*Professor Kinahan*).

4. Lestrigonus rubescens. (Plate XLVIII. fig. 5.)

Lestrigonus rubescens, *Dana, U. S. Explor. Exped.* p. 984. pl. 67. fig. 9.

Cephalon transversely ovate, flattened in front. Antennæ subequal: superior pair nearly as long as the animal, having the peduncle but half the length of the cephalon; first articulus of the flagellum as long as the peduncle, tapering: inferior pair rather longer than the superior. First pair of gnathopoda having the carpus inferiorly advanced to quite half the length of the propodos; dactylos short: second pair closely resembling the first. Perciopoda subequal; posterior pair having the basos nearly rectangular, the infero-posterior distal angle subacute. Penultimate pair of pleopoda longer than the preceding and nearly as long as the ultimate; ultimate pair having the peduncle three times as long as the telson, and not serrated upon the interior distal margin. Telson lanceolate.

Length $\frac{8}{20}$ths of an inch.

Hab. Peru (*Professor Kinahan*). Pacific Ocean, in lat. 18° S., long. 124° W. (*Dana*).

The above description and figure are taken from a specimen collected and lent to me by Professor Kinahan. The difference between it and Professor Dana's description is so slight that I cannot but regard them as the same species. Dana says that his specimens, of which he collected several, on the 7th of August, 1839, are only $\frac{1}{8}$th of an inch in length, and that the antennæ are longer than the animal.

5. **Lestrigonus Fabreii.** (Plate XLVIII. fig. 6.)

Lestrigonus Fabreii, *Edwards, Hist. des Crust.* iii. p. 82. pl. 30. f. 18.
Dana, U. S. Explor. Exped. p. 985. pl. 67. f. 10.

"Superior antennæ longer than the body; peduncle short and stout; first joint large; second short; third* as long as the first, and tapering to the extremity, furnished upon the inferior margin with a fringe of fine hairs; the two succeeding articuli of the flagellum are very small; the rest (which are many) are nearly of the same length. Inferior antennæ nearly of the same length as the superior; peduncle large, conical, having three joints exposed, and terminating in a long slender flagellum similar to that of the superior. Mandibular appendage small. First pair of gnathopoda very short and cylindrical†; second pair of the same form as in *Hyperia*. Basa of the three posterior pairs of pereiopoda large and lamellar.

"Length 5 lines.

"*Hab.* Taken by M. Fabre in the Indian Ocean."—*Edwards.* Sooloo Sea (*Dana*).

6. **Lestrigonus ferus.** (Plate XLVIII. fig. 7.)

Lestrigonus ferus, *Dana, U. S. Explor. Exped.* p. 982. pl. 67. f. 6.

"Cephalon rounded in front, and hardly flattened. Pereion tumid; anterior segments indistinct. Antennæ about as long as the body; upper a little the shorter. Three posterior pairs of pereiopoda subequal; basa rounded at the apex; dactyla half as long as the carpi.

"Length $\frac{1}{8}$th of an inch.

"*Hab.* Atlantic, in latitude 2° N. to 1° S., longitude 18° to 17° W. Collected on October 30th, also on November 3rd and 5th, 1838."—*Dana.*

7. **Lestrigonus fuscus.** (Plate XLVIII. fig. 8.)

Lestrigonus fuscus, *Dana, U. S. Explor. Exped.* p. 983. pl. 67. f. 8.

"Pereion seven-jointed; first segment nearly concealed. Telson separated by a suture from, and half narrower than, the sixth segment of the pleon. Superior antennæ as long as the body: infe-

* I take the part here called the third joint of the peduncle to be the same as that which, in other species, I have called the first articulus of the flagellum. The third joint of the peduncle is always, like the second, very short and imperfectly visible.

† Dana says that the three anterior segments of the pleon are coalesced together dorsally; and that the gnathopoda are uniform, the carpus being produced to half the length of the propodos.

rior antennæ one-fourth longer; inferior apex of basal portion acute. Basa of three posterior pairs of perciopoda obtuse at apex; dactyla less than half the carpi in length: third pair of perciopoda longer than the fourth or fifth.

"Length 2 lines.

"*Hab.* Atlantic, in latitude 1° S., longitude 17° to 18° W. Collected on November 3rd and 5th, 1838."—*Dana.*

2. HYPERIA.

Hyperia, *Latreille, Desmarest, Consid. sur les Crust.* p. 258, 1825.
Edwards, Ann. des Sc. Nat. xx. p. 387; *Hist. des Crust.* iii. p. 74.
Dana, U. S. Explor. Exped. p. 986.
Metoecchus, *Kröyer, Grönl. Amfip.* p. 60.
Edwards, Hist. des Crust. iii. p. 78.
Tauria, *Dana, U. S. Explor. Exped.* p. 988.

Cephalon large, deeper than broad. Eyes large, occupying most of the lateral, and encroaching considerably upon the frontal walls of the cephalon. Antennæ subequal, short. Gnathopoda subuniform, complexly subchelate, having the carpi produced inferiorly, and forming a process to antagonize with the extremities of the dactyla. Perciopoda subequal and moderately robust. Three posterior pairs of pleopoda biramous. Telson squamiform.

The separation of *Hyperia* from *Lestrigonus* is very doubtful, and depends only upon the length of the flagella of the antennæ; in each genus this is so variable, that it is difficult to say where *Lestrigonus* ends and *Hyperia* commences. In both genera the first articulus consists of several articuli, coalesced together. I have a strong suspicion that they will be found to be sexually rather than generically distinct. They are frequently met with associated; and I am not aware that a single female of *Lestrigonus* has been recorded, while all the specimens of which I have been able to detect the sex in *Hyperia* have been females.

The distinction between *Tauria* and *Hyperia* depends upon the opposite extreme of the development of the carpi of the gnathopoda as compared with that of Kröyer's genus *Metoecchus*, offering, to my mind, nothing more than a specific difference,—namely, in the latter the great, and in the former the small amount of development of the produced angles of the carpi of the gnathopoda.

1. Hyperia galba. (Plate XLVIII. fig. 9.) B.M.

Hyperia galba, *Montagu, Linn. Trans.* xi. p. 4. pl. 2. f. 2.
Edwards, Hist. des Crust. iii. p. 77.
W. Thompson, Ann. Nat. Hist. xx. p. 244.
White, Cat. Crust. B. M. 1847 & 1850; *Hist. Brit. Crust.* p. 206.
Gosse, Marine Zool. p. 139.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.

Hyperia Latreillii, *Edwards, Ann. des Sc. Nat.* xx. p. 388. pl. 11; *Hist. des Crust.* iii. p. 76.
White, Cat. Crust. B. M. 1847 & 1850; *Hist. Brit. Crust.* p. 206. pl. 11. f. 3.
Gosse, Marine Zool. p. 139. f. 251.
Metoechus Medusarum, *White, Hist. Brit. Crust.* p. 207.

Cephalon transversely ovate. Pereion considerably inflated. Pleon much compressed. Eyes large, occupying all the antero-lateral portion of the cephalon. Superior antennæ as long again as the cephalon, or as long as the cephalon is deep; peduncle about half the length of the cephalon, the first joint being longer than the two succeeding; flagellum about three times as long as the peduncle, slightly tapering to the extremity, having the distal half exhibiting traces of imperfect annulation. Inferior antennæ not quite so long as the superior; peduncle longer than the peduncle of the superior, penultimate joint of the peduncle broader than the ultimate; flagellum resembling that of the superior antennæ, but not quite so long. First pair of gnathopoda having the inferior angle of the meros but slightly produced; the inferior angle of the carpus but little produced anteriorly, though somewhat deeply inferiorly, and having the margin furnished with strong stiff spines; propodos cylindrical, shorter than the carpus, but less stout, armed along the inferior margin with a few very minute but sharp denticles. Second pair of gnathopoda longer than the first, having the inferior angles of both the meros and carpus more advanced anteriorly than those of the first pair, and armed with a few straight stiff spines; propodos as long as the carpus, but much more slender, unarmed along the inferior margin; dactylos short, slender, sharp. Perciopoda subequal, tolerably robust. Peduncle of the posterior pair of pleopoda reaching to the apex of the rami of the preceding pair. Telson lanceolate.

Length $\frac{7}{20}$ths of an inch.

Hab. Southern coast of Devonshire (*Montagu*); Dublin coast, in the pouches of *Rhizostoma Cuvieri* (*Hyndman**); Jersey (*Parker*); shores of France (*M.-Edwards*).

The young of this species have been figured by Mr. Gosse in his 'Naturalist's Rambles in Devonshire;' they differ considerably from the parent in general appearance: the pereion is very broad, and not deep; the pleon is narrow, and compressed against the pereion; some of the appendages appear also to be wanting. I could only make out five pairs of poda, including the gnathopoda; and none of the pleopoda are developed. Mr. Gosse figures some as rudimentary, or

* White's Brit. Crust

in a budding state, and shows seven pairs of poda upon one side of the pereion. The animals on which I made my observations were taken from the incubatory pouch of the parent, but unfortunately were in a dried state when examined; those of Mr. Gosse must have been some hours or, perhaps, days old, since he captured them living as independent creatures.

2. Hyperia Cyaneæ. (Plate XLVIII. fig. 10.) B.M.

Talitrus Cyaneæ, *Sabine, Appendix to Parry's Voyage*, pl. 1. f. 12–18.
Hyperia Cyaneæ, *Edwards, Ann. des Sc. Nat.* xx. p. 387.
Metoechus Cyaneæ, *Edwards, Hist. des Crust.* iii. p. 78.
White, Cat. Crust. B. M. 1847.

Superior antennæ very short; flagellum scarcely longer than the peduncle. Inferior antennæ longer than the superior, having only the last joint of the peduncle exposed; flagellum uniarticulate, tapering to an acute point, the superior margin smooth, the inferior slightly serrated, and furnished with a single hair upon each denticulation. Gnathopoda subequal: first pair short, tolerably robust, having the meros infero-anteriorly produced and tipped with a few hairs; carpus inferiorly produced, but not projected anteriorly along the margin of the propodos; propodos subovate, the superior margin arcuate, the inferior straight; dactylos short, straight: second pair scarcely differing from the first. First two pairs of pereiopoda subequal and uniform: last three pairs longer than the two preceding, subequal and uniform, having the basa scarcely dilated; propoda armed upon the anterior margin with short, obliquely pointed hairs; dactyla long, sharp, slightly curved, and furnished upon the inner side with a bunch of cilia near the centre. Three posterior pairs of pleopoda unequal: antepenultimate pair having the peduncle reaching just beyond the extremity of the telson; rami long, slender, smooth, and unequal, the inner being longer than the outer, and reaching beyond the extremity of the peduncle of the last pair: penultimate pair short, its peduncle not reaching as far as that of the preceding pair; rami as long as those of the preceding pair, but not reaching as far, unequal, smooth: ultimate pair long; peduncle reaching as far as the extremity of the rami of the penultimate, and four times as long as the telson; rami slender, smooth, unequal, about half the length of the peduncle. Telson short, obtusely triangular.

Length $\frac{3}{20}$ths of an inch.

Hab. Baffin's Bay (*Captain Parry*).

The above description and figure are taken from one of the specimens in the collection of the British Museum, presented by the

original describer of the species, Colonel Sabine,—being, I believe, the identical specimens from which he drew up his description in the Appendix to 'Parry's First Voyage.'

3. Hyperia Medusarum. (Plate XLIX. fig. 1.)

Oniscus Medusarum, *O. Fabricius, Faun. Grönl.* p. 355.
Metoecbus Medusarum, *Kröyer, Grönl. Amfip.* p. 60. pl. 3. f. 15.
Edwards, Hist. des Crust. iii. p. 78.
White, Cat. Crust. B. M. 1847.

Cephalon ovate, not much deeper than broad. Superior antennæ not so long as the cephalon; first joint of the peduncle long, second and third rudimentary; flagellum three times as long as the peduncle, slender, tapering to an acute point, smooth, showing no traces of articulation. Inferior antennæ not longer than the superior, last two joints only exposed; peduncle not reaching as far as the peduncle of the superior pair; flagellum about four times as long as that of the superior, fringed with a few distantly scattered cilia. First pair of gnathopoda short and robust, having the meros inferiorly produced and tipped anteriorly with a few stiff hairs: carpus long, broad, and widening anteriorly, being inferiorly (but not anteriorly) produced along the inferior margin of the propodos; anterior margin fringed with a few stiff hairs: propodos not more than half the length of the carpus; superior margin slightly arcuate, and fringed with four or five equidistant hairs; inferior margin straight, armed with several small denticles: dactylos about half the length of the propodos, slender and sharp. Second pair of gnathopoda having the meros inferiorly produced and tipped with a few hairs; carpus infero-anteriorly produced to quite half the length of the propodos, having the margin fringed with stiff hairs; propodos slender, long, rather longer than the carpus, cylindrical, slightly curved, more so on the superior than on the inferior margin; dactylos slender, sharp. Pereiopoda subequal. Penultimate pair of pleopoda shorter than the preceding or ultimate: ultimate pair having the peduncle as long again as the telson; rami about half the length of the peduncle, serrated. Telson broadly lanceolate.

Length $\frac{9}{20}$ths of an inch.

Hab. Greenland (*Kröyer, Möller*).

The description and figure in this Catalogue are from specimens in the British Museum—some labelled "Banks's Museum," and others stated to be from the collection of Dr. Möller (*White, l. c.*).

I have no hesitation whatever in following the suggestion advanced by Dana (*U. S. Explor. Exped.* p. 986). The development of the

inferior angle of the carpus is gradual in different species, from being only inferiorly, but not anteriorly, produced, to being antero-inferiorly produced to nearly the length of the propodos; so that Dana "doubted the propriety of sustaining the genus of Kröyer based on this distinction—that is, on having well-formed *hands* terminating the second pair of gnathopoda."

Assuming, of which I have little doubt, that this is the same species as that figured and described by Kröyer in his 'Grönlands Amfipoder,' I am much inclined to consider it as a synonym of *H. galba*, the only difference between them being scarcely more than a variation, and consisting in the absence of any traces of articulation in the flagella, and in having the carpus of the second pair of gnathopoda a little more produced anteriorly.

4. Hyperia macrocephala. (Plate XLIX. fig. 2.)

Tauria macrocephala, *Dana, U. S. Explor. Exped.* p. 988. pl. 68. f. 2.

"Cephalon very large, and nearly filled with the pigment of the eyes. Pereion short and stout: fourth coxa produced below and acute; first, second, and third truncate. Antennæ short (hardly as long as half the height of the cephalon), subequal, subulate; extremity multiarticulate. First pair of gnathopoda shortest, quite pubescent; carpus broad, more than twice as long as the meros, and much longer than the propodos; dactylos minute. Pereiopoda subequal and naked. Three posterior pairs of pleopoda unequal; the antepenultimate pair reaching very nearly to the apex of the ultimate; the penultimate pair reaching only to the apex of the base of the ultimate.

"Length 9 lines.

"*Hab.* Antarctic Seas. Taken from the cavity of a Medusa, near longitude 157° E., and latitude 66° S."—*Dana.*

5. Hyperia agilis. (Plate XLIX. fig. 3.)

Hyperia agilis, *Dana, U. S. Explor. Exped.* p. 986. pl. 67. f. 11.

"Cephalon of moderate size; pigment of eyes much smaller than usual. Pereion long. All the coxæ short, truncate. Antennæ rather long (half as long as the pereion), subequal: inferior slightly the longest, three-jointed, not terete; last joint long and remotely hairy: superior five-jointed; fourth joint stout, long, ciliate below; the last minute. Gnathopoda subequal; coxæ narrow. Three posterior pairs of pereiopoda of moderate length; setæ short and few.

"Length 3–4 lines.

"*Hab.* In the Pacific, in latitude 41° S., longitude 76° 25′ W.

Collected several specimens on April 5, 1839, some of which were in the water-cavity of *Salpa*. Also between New Zealand and New Holland."—*Dana*.

The above description so closely resembles that of *Lestrigonus Gaudichaudii*, that I should have united them, had not Dana described the flagella of this species as being uniarticulate.

6. **Hyperia trigona.** (Plate XLIX. fig. 4.) B.M.

Hyperia trigona, *Dana, U. S. Explor. Exped.* p. 987. pl. 67. f. 12.

Cephalon ovate, not large. Superior antennæ as long as the cephalon is deep, subulate. Inferior antennæ "reaching nearly to the fourth segment of the pereion, very slender; flagellum indistinctly articulated*." Gnathopoda very short: first pair having the carpus scarcely produced inferiorly; propodos tapering; dactylos short: second pair having the meros inferiorly produced; carpus infero-anteriorly produced to two-thirds the length of the propodos; dactylos short and straight. First two pairs of pereiopoda subequal, slender, having the carpi broad and setose; three posterior pairs much longer than the two preceding, having the propoda very long, nearly half the length of the whole, anteriorly fringed with fine cilia, which in the third pair are long, thickly packed, and comb-like, but sparsely existing on the fourth and fifth pairs. Peduncle of the antepenultimate and penultimate pairs of pleopoda reaching to half the length of that of the ultimate; rami of the penultimate pair unequal, and longer than those of the preceding pairs: ultimate pair having the peduncle three or four times as long as the telson; rami unequal, slender, smooth, nearly one-half the length of the peduncle. Telson obtusely triangular, scarcely as long as broad.

Length $\frac{6}{20}$ths of an inch="6–8 lines" (*Dana*).

Hab. Probably from Lagullas Bank, near Cape Horn (*Dana*); Antarctic regions.

The peculiar form of the pereion (which Dana says is "very much compressed, the back rising to an edge") I attribute to accident, such as to pressure by the hand when first caught, since in every other respect the details of the specimens collected in the Antarctic expedition, and presented to the British Museum by the Admiralty, correspond exactly with Dana's description and figure. No species in any genus of this family, that I am aware of, has a dorsal carina.

* I have quoted the description of the inferior antennæ from Dana, because the flagellum is wanting beyond the first long articulus in the specimen in the British Museum.

7. Hyperia oblivia. (Plate XLIX. fig. 5.)

Hyperia oblivia, *Kröyer, Grönl. Amfip.* p. 70. pl. 4. f. 19.
Edwards, Hist. des Crust. iii. p. 77.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.
White, Hist. Brit. Crust. p. 206.

Cephalon transversely ovate; anterior margin flattened: pigment of the eyes occupying only part of the anterior portion of the cephalon. Superior antennæ as long as the cephalon, having the peduncle very short; flagellum broader at the base than the peduncle, tapering, subulate, sharp, uniarticulate, but showing incipient signs of articulation. Inferior antennæ longer than the superior, slender; peduncle short (two joints only exposed); flagellum long, having the first articulus as long as the three others. Gnathopoda subequal, short: first pair the shorter, cylindrical, robust; carpus scarcely produced inferiorly; propodos not so long as the carpus, superior margin arcuate, inferior margin straight, serrated anteriorly with a row of small denticles; dactylos short, obtuse: second pair having the carpus slightly produced inferiorly, but not anteriorly, and fringed with a few hairs; propodos as long as the carpus, but not so stout; dactylos half the length of the propodos, arcuate, sharp. First two pairs of pereiopoda long, much longer than the gnathopoda, having the carpi posteriorly dilated and fringed with a few hairs; propoda slightly arcuate, longer than the carpi, cylindrical; dactyla long and sharp. Third and fourth pairs of pereiopoda subequal: third pair longest, having the basos not dilated; carpus long; propodos nearly twice as long as the carpus, slender anteriorly, fringed with a comb-like row of cilia; dactylos long, slightly curved, sharp: the fourth pair resembles, but is slightly shorter than, the third; and the fifth pair is still a little shorter than the fourth. Posterior pair of pleopoda longer than the preceding, and having the margins of the rami serrated. Telson lanceolate. The colour, as well as could be recognized from a dead specimen, is corneous, with some black stellate markings on the dorsal surface of the pereion.

Length $\frac{4}{20}$ths of an inch.

Hab. Greenland (*Kröyer, Edwards*); Moray Frith (*Rev. G. Gordon*).

8. Hyperia pupa.

Hyperia pupa, *Costa, Rend. della Reale Accad. delle Sc. di Napoli,* 1853, p. 178.

"Having the first, second, and third pairs of pereiopoda gradually increasing in length, fourth and fifth decreasing. Penultimate pair

of pleopoda shorter than the antepenultimate: ultimate having the peduncle very short; rami very unequal, the inner one being the larger, the outer one the longer and narrower.

"Length 3½ lines.

"*Hab.* Coast of Naples."—*Costa.*

This is very like *H. oblivia*.

9. Hyperia Lesueurii.

Hyperia Suerii, *Latreille, Encycl. Méthod.* ix. t. 328. f. 17, 18 (1824). *Desmarest, Consid. sur les Crust.* p. 258.
Hyperia Lesueurii, *Edwards, Hist. des Crust.* iii. p. 77.

"Four antennæ setaceous. Pereiopoda terminated by a simple pointed joint. Cephalon rather small, round, flat in front, not prolonged into a rostrum. Body conical, terminated by two triangular, elongate, horizontal lamellæ."—*Desmarest.*

I regret not having had the opportunity of studying the description of Latreille in the work above quoted, the more especially since it is that of the type on which the genus was founded. The description given by Desmarest, for which he expresses his obligation to Latreille, is so imperfect that it will do for any species of the genus, except for the fact that the telson in *H. Lesueurii* consists of two triangular, elongate, horizontal lamellæ—a characteristic that, to say the least, is doubtful, as there is no genus in the family so distinguished.

Desmarest gives the scientific name as *H. Suerii*, Latr.; but since the popular one is *Hypérie de Lesueur*, I have considered it a typographical error and followed M.-Edwards.

3. VIBILIA.

Vibilia, *Edwards, Ann. des Sc. Nat.* xx. p. 386; *Hist. des Crust.* iii. p. 72.
Lanceola, *Say, Proc. Acad. Philad.* p. 317.

Cephalon small. Pereion smooth, not distended. Eyes small. Antennæ subequal: superior pair terminating in a uniarticulated flagellum: inferior pair slighter than the superior, terminating in a multiarticulate flagellum. First pair of gnathopoda cylindrical, having the inferior angle of the carpus but little, if at all, produced: second pair having the inferior angle of the meros and carpus considerably produced anteriorly. First two pairs of pereiopoda tolerably long, subequal; third and fourth pairs much longer than the preceding and subequal; fifth pair very short. Three posterior pairs of pleopoda unequal, the last pair

having the peduncle long and the rami short and flat. Telson single.

I have retained the name given to this genus by M.-Edwards in consequence of the obscurity of Say's description, which, however, has priority of date.

1. **Vibilia Edwardsii**, n. sp. (PLATE XLIX. fig. 6: fig. 7, young.)

Female.—Eyes long-oval. Superior antennæ very stout; second and third joints smaller than the first: flagellum flattened; upper margin thick, fringed with a row of equidistant, short, fine hairs; apex obtusely pointed; anterior margin oblique, fringed with a thick row of short incipient spines (microscopic). Inferior antennæ shorter than the superior, having a flagellum consisting of seven articuli —one long, four short, one a little longer, and a minute terminal one. First pair of gnathopoda having the meros inferiorly produced and armed with a few subulate spines; carpus stout, the inferior margin carrying a few serrated subulate spines; propodos not so robust as the carpus, having the inferior margin furnished with a row of short stiff hairs of equal length; dactylos short, stout, and serrated upon the inner margin. Second pair of gnathopoda longer than the first, having the meros considerably produced anteriorly below and tipped with a few stiff serrated spines; carpus long, not broader than the meros, inferiorly produced anteriorly to a sharp point reaching to half the length of the propodos, and serrated upon the inner margin; propodos half the breadth of the carpus and serrated along the inferior margin; dactylos straight, acute, and serrated upon the inner margin. First two pairs of perciopoda uniform, tolerably robust, much longer than the gnathopoda, having the carpi rather shorter than the mera; propoda longer than the carpi, armed upon the inner margin with distant spinules; dactyla arcuate, sharp: third and fourth pairs uniform, having the basa dilated, long-ovate; mera and carpi robust, subequal, the latter furnished upon the inner distal angle with two long straight spines and a few short, straight marginal cilia; propoda nearly as long as the two preceding joints, slender, margins parallel, slightly arcuate, fringed upon the inner margin with minute distant cilia; dactyla long, pointed, and slightly bent: fifth pair not reaching further than the extremity of the meros of the preceding pair of perciopoda; basos scarcely longer than the coxa; ischium short, meros rather longer, carpus still longer, propodos still more so, and dactylos about the same length as the propodos. Ultimate pair of pleopoda having

the peduncle as long again as the telson; rami half the length of the peduncle, having the margins minutely serrated: penultimate pair not reaching beyond the extremity of the peduncle of the last pair; rami coarsely serrated, the denticles upon the inner margins minutely serrated: antepenultimate pair reaching a little beyond the penultimate; rami having the margins serrated. Telson lanceolate.

Length $\frac{3}{4}$ of an inch.

Hab. Near the Powel Islands; Expédition de la Zélée (*MS. label*).

I have dedicated this species to the founder of the genus, to whose courtesy and kindness I am indebted for an examination of the specimens in the Museum of the Jardin des Plantes. I was not only permitted to break open the secured covers to the bottles, for the purpose of a closer examination of the typical species, but was entrusted with a valuable collection of unnamed specimens to bring to England for more convenient study. It was amongst these latter that I obtained the one I have now described, and named in honour of M. Milne-Edwards, the Professor of Entomology in the Jardin des Plantes at Paris. I have therefore been enabled to describe the animal in more minute detail than I otherwise could. Moreover I found within the incubatory pouch many young animals, having apparently just quitted the eggs; they were very small—about $\frac{1}{50}$th of an inch in length. The observation of a considerable number has enabled me to state the following curious facts, which must have some influence in the classification of this division of the Amphipoda.

Young.—The eyes are small, round, and not very distant. The superior antennæ, instead of being like those of the adult, are formed of seven articulations, taking the first three joints to be the peduncle: the first is moderately long; the second about half the length of the first; the third about half that of the second and narrower also; while those that form the flagellum consist of four that gradually diminish in length and diameter to the apex, which is tipped with four robust hairs. The inferior pair of antennæ are very minute indeed, and consist of a single joint, longer than broad and tipped with two hairs: this is situated behind and beneath the superior. The appendages of the mouth are very immature. The gnathopoda are imperfectly developed; all the joints but the last three are subequal and nearly as broad as long; the last is much narrower, cylindrical, straight, and obtuse. The first two pairs of pereiopoda are uniform; the carpus is slightly more robust than the propodos, gradually tapering to the extremity, which is posteriorly tipped with a single stiff spine on each side of the articulation with the dactylos; dactylos short, sharp, and

slightly curved: the third pair of perciopoda are not longer than the preceding, but have the inferior distal angle produced to a sharp process reaching to about one-third the length of the propodos; the propodos is longer than the carpus, having the inferior margin hollowed, therefore presenting two margins, each of which is produced anteriorly to a sharp point, between which the dactylos falls in closing on the propodos; dactylos terminating in a hook-shaped sharp unguis: the fourth pair of perciopoda resemble the preceding, except in being slightly longer; the carpus has the inferior angle considerably more produced and more slender, waved also; the propodos is long and narrow; the dactylos, which closes between the teeth-like process at the inferior extremity of the propodos, terminates in a hook-shaped unguis: the fifth pair are not very distinct at their junction with the body, they are short, reaching to about half the length of the preceding, having the joints subequal, terminating obtusely, and furnished with a subapical spinule and spine tipped with a rudimentary unguis: this spine probably corresponds with the inferior distal carpal process of the two preceding pairs of perciopoda, the propodos being imperfectly developed and the dactylos absent. Only two, or at most three, pairs of pleopoda are developed (and these in a very rudimentary stage), consisting of a peduncle and two terminal processes, the rudiments of the future rami. The telson is very large, being nearly as broad as the rest of the posterior portion of the animal, and terminating round and smooth.

The following are points of interest:—The superior pair of antennæ assume a more developed condition in the larva than in the adult, while the converse is the case with the inferior pair. The gnathopoda are almost embryonic, exhibiting no trace of their future important character. The first two pairs of perciopoda bear no inconsiderable resemblance to those of the adult animal; whilst the two next vary from the type in the adult altogether, assuming a form that corresponds more nearly with those of *Phronima*.

2. Vibilia affinis. (Plate XLIX. fig. 8.)

Vibilia affinis, *MS. Cat. Musée Jardin des Plantes.*

Cephalon as long as deep. Eyes small. Superior antennæ longer than the cephalon; peduncle about half the length of the cephalon, first joint as long as the two succeeding joints; flagellum three times as long as the peduncle, lanceolate, acute. Inferior antennæ slender, not longer than the superior, reaching to about the third segment of the pereion. Gnathopoda short, small, slender; second pair having the carpus inferiorly produced. First two pairs of perciо-

poda subequal; third and fourth pairs subequal; fifth pair short. Ultimate pair of pleopoda not reaching beyond the two preceding pairs. Telson squamiform, small.

Length $\frac{5}{20}$ths of an inch.

Hab. Java.

The figure and description of this species are taken from the specimen in the Museum of the Jardin des Plantes.

3. Vibilia Peronii.

Vibilia Peronii, *Edwards, Ann. des Sc. Nat.* xx. p. 386.

"Superior antennæ formed of three joints, of which the first two [peduncle] are very short, and the last [flagellum] very long, consisting of a thick oval lamella, rounded at the apex, having the inner margin hollowed, and furnished with some hairs and a few spines. Inferior antennæ cylindrical, and formed of several joints, of which the distal are very small. Eyes large and oval. Basos of each pair of poda except the last nearly cylindrical, but that of the last pair of pereiopoda flat and oval.

"Length about 4 lines.

"*Hab.* Seas of Asia."—*M.-Edwards.*

4. Vibilia Jeangerardii. (Plate XLIX. fig. 9.)

Vibilia Jeangerardii, *Lucas, Algérie*, f. 4.

Cephalon nearly as long as broad; dorsal surface anteriorly produced. Eyes moderately large. Superior pair of antennæ longer than the cephalon; first joint of the peduncle scarcely reaching beyond the upper margin of the cephalon, second and third minute; flagellum long, broad, and obtusely pointed, increasing inferiorly in diameter towards the apex. Inferior pair of antennæ shorter than the superior and slender. Second pair of gnathopoda having the meros and carpus infero-anteriorly produced. First two pairs of pereiopoda subequal; third and fourth pairs longer, subequal; fifth pair scarcely half the length of the preceding. Posterior pair of pleopoda reaching but little beyond the extremity of the antepenultimate pair; penultimate scarcely reaching beyond the extremity of the peduncle of the ultimate pair. Telson squamiform, half as long as the peduncle of the last pair of pleopoda.

Length $\frac{3}{4}$ of an inch.

Hab. Mediterranean (*Lucas*).

The above description and figure are taken from the figure given by M. Lucas in the work cited.

5. Vibilia speciosa.

Vibilia speciosa, *Costa, Rend. della Reale Accad. delle Sci. di Napoli*, 1853, p. 178.

"With the back arched. Cephalon slightly triangularly produced in front. First segment of the pereion short. Superior antennæ as long as the cephalon and first segment of the pereion; peduncle short; flagellum lanceolate, sides incurved, unarmed. Inferior antennæ slender, filiform, and shorter than the superior.

"Length $3\frac{1}{2}$ lines.

"*Hab.* Coast of Naples."—*Costa.*

6. Vibilia pelagica.

Lanceola pelagica, *Say, Proc. Acad. Philad.* i. p. 317.
Hyperia pelagica, *Edwards, Ann. des Sc. Nat.* xx. p. 387; *Hist. des Crust.* iii. p. 77.

Cephalon short, transverse, superiorly produced anteriorly to an acute angle; frontal margin concave. Pereion oval, convex above and beneath, imbricated; first segment shortest; second and third longest, equal. Pleon abruptly narrower than the pereion. Eyes longitudinal, opposite to the base of the superior antennæ. Superior antennæ short, compressed, reaching to the extremity of the peduncle of the inferior pair; peduncle robust, concealed; flagellum not articulated, linear, compressed, obtuse. Inferior antennæ more than half the length of the pereion; peduncle short; flagellum not articulated. Mandibles having an appendage*. Gnathopoda short, compressed; first pair the shorter, having the coxa produced anteriorly. Pereiopoda cylindrical; first and second pairs subequal; third pair longest; fourth pair longer than the pereion; fifth not longer than the first and second. Three posterior pairs of pleopoda consisting of a foliaceous linear peduncle supporting two acute, lanceolate, subequal rami; antepenultimate and penultimate pairs equal; ultimate pair rather shorter. Telson attenuate.—(*Condensed from Say.*)

Length $1\frac{1}{4}$ inch.

Hab. Gulf Stream.

7. Vibilia depilis. (Plate XLIX. fig. 10.)

Thaumalia depilis, *Templeton, Trans. Ent. Soc.* i. p. 186. pl. 20. f. 2.

"Cephalon anteriorly produced over the first joint of the peduncle of

* "Antennæform processes." This term, which Say frequently uses in his descriptions, I consider to refer to the mandibular appendages that are frequently seen projecting, like a third and smaller pair of antennæ, between or beneath the others.

the superior antennæ. Eyes deeply imbedded, roundish. Superior antennæ short, tumid; peduncle short; flagellum uniarticulate, spindle-shaped. Inferior antennæ posterior to the superior, being also slighter and shorter; flagellum not longer than the last joint of the peduncle. Gnathopoda styliform. Perciopoda terminating in a sharp, straight dactylos. Three anterior pairs of pleopoda, like all the rest of the animal, without hairs; three posterior pairs of pleopoda biramous, styliform. Colour hyaline, with a few dark specks, especially along the inferior edges of the segments of the pleon.

"Length $\frac{1}{8}$th of an inch.

"*Hab.* Mauritius, or on the way from Europe."—*Templeton.*

Mr. Templeton thinks this species may be *Erythrocephalus melanophthalmus* of Tilesius (Neue Ann. Wetterauisch. i. p. 6. pl. 21 *a*. f. 5), and states his inability to allot this animal to its proper place in the order; but I have little doubt that his figure is an imperfect representation of *Vibilia*, and probably the young of some known species.

4. CYLLOPUS.

Cyllopus, *Dana, U. S. Explor. Exped.* p. 990.

Cephalon transversely ovate. Eyes filling the entire cephalon. Antennæ distant: superior pair near the dorsal surface, having the flagellum uniarticulate, tapering to a point: inferior pair near the oral surface, slender, having the flagellum more or less articulated. Fifth pair of perciopoda rudimentary.

This genus, with the exception of the above-enumerated points, bears a near resemblance to *Vibilia*; but these differences are sufficiently important to separate the genera from each other. Had they been found associated, they might have been supposed to be sexually related.

1. Cyllopus Magellanicus. (Plate L. fig. 1.) B.M.

Cyllopus Magellanicus, *Dana, U. S. Explor. Exped.* p. 990. pl. 68. fig. 1.

Cephalon nearly round. Eyes large; pigment black, almost filling the entire cephalon. Superior antennæ longer than the cephalon; peduncle short; flagellum tapering to a sharp point. Inferior antennæ longer than the superior, very slender. Mandible having an appendage, of which the second joint is the longest. First pair of gnathopoda not having the inferior margin of the carpus produced; propodos minutely serrated; dactylos straight, minutely serrated. Second pair of gnathopoda having the carpus infero-

anteriorly produced to a point and minutely serrated; propodos having the margins parallel, the inferior being serrated anteriorly with a row of triple-pointed teeth; dactylos short, thick, sharp, and serrated upon the inner margin. First two pairs of pereiopoda subequal, longer than the gnathopoda; basa not dilated; propoda longer than the carpi, and armed with short stiff spines upon the flexible margin; dactyla short. Third and fourth pairs of pereiopoda much longer than the two preceding pairs, having the basa posteriorly dilated; ischia and carpi subequal; propoda longer than the carpi, capable of being reflexed, and armed with short stiff spines along the flexible margin. Fifth pair of pereiopoda short, scarcely reaching to the extremity of the basos of the preceding pair, having the basos posteriorly dilated and nearly as large as that of the preceding pair; the other joints almost rudimentary. Antepenultimate pair of pleopoda reaching as far as the extremity of the ultimate pair; rami as long as the peduncle, minutely serrated on both sides: penultimate pair shorter than the preceding, having the rami longer than the peduncle and serrated on both sides: ultimate pair having the peduncle reaching to the extremity of the rami of the preceding pair, and having the rami scarcely one-fourth of the length of the peduncle, short, lanceolate, smooth. Telson small, cylindrical. The colour of the animal, as well as can be judged from specimens long preserved in spirits, must be very black, since it is thickly covered with coarse stellate spots of black pigment.

Length $\frac{6}{20}$ths of an inch="4 lines" (*Dana*).

Hab. S. Atlantic, 37° 26′ S. lat., 7° 44′ W. long. (*B.M.*). "Orange Bay, Tierra del Fuego, on Fucus, Feb. 18, 1859" (*Dana*).

The description and figure are taken from specimens preserved in the British Museum.

2. **Cyllopus Lucasii**, n. s. (Plate L. fig. 2.)

Cephalon slightly produced above and between the superior antennæ. Superior antennæ tapering to a down-curved point. Inferior antennæ reaching to nearly three-fourths the length of the superior: flagellum consisting of four articuli; first long, second half as long, third longer than first; terminal short and pointed, furnished inferiorly with a few hairs. First pair of gnathopoda robust; carpus very broad, infero-anteriorly produced to one-third the length of the propodos, inferior and anterior margins deeply serrated; propodos long-ovate, inferior margin deeply serrated; dactylos pointed, slightly curved downwards, inferior margin serrated.

Second pair of gnathopoda having the carpus inferiorly produced in a straight line to half the length of the propodos, inferior margin smooth; propodos straight, slightly narrowing distally, inferior margin serrated, the serratures increasing in depth anteriorly; dactylos stout, sharp. First pair of pereiopoda twice the length of the gnathopoda, having the carpus broad, with the infero-anterior margin oblique and serrated; propodos not longer than the carpus, having the inferior margin serrated, and capable of being inflected against the carpus; dactylos subulate, serrated on the posterior margin towards the articular extremity. Second pair of pereiopoda uniform with the first: third pair considerably longer, having the basos dilated, the meros and carpus subequal,—the meros with the anterior margin fringed with a few distant hairs, the carpus with the anterior margin furnished with a row of close cilia of equal length and a few distant hairs, infero-anterior margin oblique; propodos slightly arcuate, margins parallel, anterior serrated and furnished with a few distant hairs; dactylos slender, smooth, sharp: the fourth pair resemble the third, except that they are slightly longer: fifth pair rudimentary, not reaching beyond the distal extremity of the basos of the fourth pair; basos broadly dilated, posteriorly emarginate; dactylos as long as the propodos, terminating obtusely, being as broad as at the base. Ultimate pair of pleopoda having the peduncle nearly five times as long as the telson; rami about half as long as the peduncle, having the inner branch coarsely, and the outer minutely serrated upon the inner side, except towards the extremity, where it is more coarsely serrated on each margin: penultimate pair having the peduncle not reaching beyond the last segment of the pleon, whilst the rami reach to the extremity of the peduncle of the ultimate pair, the inner branch being coarsely serrated upon the outer and on the distal extremity of the inner margin, and each denticle being minutely serrated along the outer line: antepenultimate pair having the peduncle reaching as far again as that of the penultimate, the rami reaching beyond the extremity of the peduncle of the ultimate, and serrated like those of the penultimate pair. Telson small, lanceolate.

Length $\frac{1}{20}$ths of an inch.

Hab. The Powel Islands (*MS. label on bottle*).

The animal from which the description and figure are taken is one of the collection entrusted to me, and belonging to the Museum of the Jardin des Plantes. It is named in compliment to M. Lucas, the accomplished naturalist of the expedition to Algeria.

3. Cyllopus Danæ, n. s. (Plate L. fig. 3.)

Resembles *C. Lucasii*, except in the following details:—Superior antennæ with the flagellum terminating in a minute articulus. Inferior antennæ having the flagellum with one long and two short terminal articuli. First pair of gnathopoda having the carpus not produced anteriorly beneath, smooth; propodos unarmed, as also the dactylos: second pair having the carpus antero-inferiorly produced, minutely serrated upon the inferior margin; propodos minutely serrated along the inferior margin; dactylos scarcely serrated. First and second pairs of pereiopoda uniform, having the carpi unarmed; propoda slightly serrated upon the anterior margin towards the distal extremity: fifth pair having the posterior margin of the basos not emarginate. Three posterior pairs of pleopoda imperfectly serrated.

Length $\frac{11}{20}$ths of an inch.

Hab. Near the Powel Islands (*MS. label on bottle*).

This specimen, which I obtained from the same bottle as *C. Lucasii*, differs chiefly in having a less perfect armature generally; the serrated character being reduced, or sometimes wanting, in different parts of the body. It is named in compliment to the founder of the genus.

5. TYRO.

Tyro, *Edwards, Hist. des Crust.* iii. p. 80.

"Resembles *Hyperia* generally, but has the cephalon anteriorly truncated. Superior antennæ longer than the body and composed of *two joints*, the peduncular one short, the other styliform, stout, and excessively long. Inferior antennæ short, almost rudimentary. Gnathopoda not subchelate. Pereiopoda unequal: third pair longest, very strong, and having the propodos and dactylos filiform; fifth pair very small, and so slight that they appear not to be adapted for locomotion. Three posterior pairs of pleopoda very narrow, and not presenting at their extremities two distinct rami." —*M.-Edwards.*

1. Tyro cornigera.

Tyro cornigera, *Edwards, Hist. des Crust.* iii. p. 80.
Hyperia cornigera, *Edwards, Ann. des Sc. Nat.* xx. p. 387.

"Supero-anterior margin of the cephalon furnished with two little obtuse divergent crests. Superior antennæ sparsely ciliated upon the internal border. Inferior antennæ rudimentary in the female, but in the male composed of four joints, of which the last two are the longest. First pair of gnathopoda tolerably robust; carpus

and propodos rather elongated; dactylos nearly filiform. Dactyla of the first and second pairs of pereiopoda tolerably robust; basos of the third pair of pereiopoda dentated upon the posterior border and armed with a stout tooth at the infero-anterior angle.

"*Hab.* Atlantic Ocean (*M. Raynaud*)."—*M.-Edwards.*

6. DAIRINIA.

Daira, *Edwards, Ann. des Sc. Nat.* xx. p. 392; *Hist. des Crust.* iii. p. 83.
Dana, U. S. Explor. Exped. p. 997.
Dairinia, *Dana, U. S. Explor. Exped.* p. 1442*.

"Resembles *Hyperia*. Superior antennæ wanting. Inferior antennæ short, resembling those of *Hyperia*. First segment of the pereion extremely narrow and almost entirely hid by the second. Second pair of gnathopoda complexly subchelate†; carpus inferiorly produced nearly to the extremity of the propodos; dactylos short and curved."—*M.-Edwards.*

1. Dairinia Gabertii.

Daira Gabertii, *Edwards, Ann. des Sc. Nat.* xx. p. 393.

"Cephalon very large, less raised than the pereion, and almost entirely occupied by the eyes. Antennæ very short and subulate. Pereion not inflated as in *Hyperia*, but diminishing gradually in size posteriorly. Gnathopoda very small, compressed, and nearly of the same form; the inferior angle of the carpus less developed in the first than in the second pair. First and second pairs of pereiopoda longest. Peduncle of the first three pairs of pleopoda longer and more slender than in *Hyperia*, and their terminal rami nearly linear; the three posterior pairs of pleopoda having the rami long and pointed.

"Length about 4 lines.

"*Hab.* Found in the Indian Ocean by the officers of 'La Chevrette'."
—*M.-Edwards.*

2. Dairinia debilis. (Plate L. fig. 4.)

Daira? debilis, *Dana, U. S. Explor. Exped.* p. 991. pl. 68. f. 3.

"Cephalon in the profile a little oblong and subtriangular, obtuse in front, nearly filled with the pigment of the eyes. Pereion highest

* Dana has changed the name of this genus from *Daira* to *Dairinia*, in consequence of the former name having been previously employed.

† "Enfin les pattes de la seconde paire se terminent par une espèce de main didactyle, dont le doigt mobile (propodos) dépasse un peu le doigt immobile (inferior angle of the carpus), et est armé au bout d'un ongle (dactylos) crochu et mobile."—*M.-Edwards's Hist. des Crust.*

at the middle. Antennæ inserted in lower side of cephalon, short, five- to seven-jointed, joints all short. Gnathopoda quite small; carpus of second pair not oblong, finely serrulate below, lower apex produced and triangular, acute; meros hardly smaller and not transverse; propodos on the inner side minutely setulose. First and second pairs of pereiopoda subequal, scarcely shorter than the following pairs; third and fourth pairs subequal; fifth pair very short, the coxa of moderate size, the following part but slightly longer.

"Length 3 lines.

"*Hab.* In the Pacific, latitude 2° S., longitude 175° W. Collected March 30th, 1841, attached to Medusæ."—*Dana.*

3. Dairinia depressa. (Plate L. fig. 5.)

Daira? depressa, *Dana, U. S. Explor. Exped.* p. 992. pl. 68. f. 4.

"Body depressed, broad. Cephalon seen in profile, or from above, transversely hemispherical. Segments of pereion subequal. Antennæ very small, four-jointed, third joint longer than second. Gnathopoda nearly naked, small; carpus of second pair transverse, serrulate below, nearly square, with the lower angle triangularly prolonged; anterior margin entire. First and second pairs of pereiopoda long, subequal; third and fourth pairs subequal, basa broad; fifth pair small, basos short and very narrow, the following part minute (half shorter than the basos).

"Length 3 lines.

"*Hab.* Fifteen miles west of Savaii, one of the Samoan Group, March 5th, 1841."—*Dana.*

4. Dairinia inæquipes. (Plate L. fig. 6.)

Daira? inæquipes, *Dana, U. S. Explor. Exped.* p. 993. pl. 68. f. 5.

"Cephalon subrotund. Pereion seven-jointed, first segment shortest. Antennæ small, five-jointed, upper side sparingly and very short setulose. Gnathopoda quite small; carpus of second pair subtriangular, inferior angle triangular, acutely serrate within and without. First and second pairs of pereiopoda a little larger than the gnathopoda, slender; third pair rather long; fourth much shorter, basos broad elliptical, the remaining part but little longer than the basos; fifth pair small, the basos much smaller than that of the preceding pair, and the following part shorter than the basos.

"Length 2 lines.

"*Hab.* Off south end of Mindoro, January 24, 1842."—*Dana.*

7. CYSTOSOMA.

Cystosoma, *Guérin-Méneville, Revue Zoologique*, i. p. 214, July 1842 (not *Westwood*).

Cephalon large, anteriorly depressed. Eyes occupying nearly the entire cephalon. Superior antennæ absent. Inferior antennæ short, slender. Gnathopoda small, having the carpi inferiorly produced. First pair of pereiopoda much longer than the gnathopoda; second pair longer than the first; third pair much longer than the second; fourth pair shorter than the third, and fifth pair much shorter than the fourth. Three posterior pairs of pleopoda long, slender, terminating in short lanceolate rami. Telson single, squamose.

1. Cystosoma Neptuni. (Plate L. fig. 7.)

Cystosoma Neptuni, *Guérin-Méneville, Revue Zoologique*, July 1842.

Cephalon having the anterior margin furnished with a submarginal row of minute denticles. Pereion and pleon corrugated and imbricated. Gnathopoda very minute, subequal. First pair of pereiopoda very slender, nearly four times as long as the gnathopoda, having the basos posteriorly serrated, as also the posterior margin of the meros and carpus; propodos as long as the carpus, but not so stout, unarmed; dactylos short: second pair like the first, but longer: third pair very long, having the anterior margin of the basos serrated; meros and carpus continuous, straight, having the anterior margin serrated; propodos much narrower than the carpus, straight, unarmed; dactylos minute: fourth pair like the third, but shorter: fifth like the preceding, but much shorter, and not so distinctly serrated. Pleopoda long, slender, reaching to about the same length; rami short, lanceolate. Telson narrow, tapering, sharp, nearly as long as the peduncle of the ultimate pair of pleopoda.

Length $3\frac{1}{2}$ inches.

Hab. Indian Ocean (*Guérin-Méneville*).

8. THEMISTO.

Themisto, *Guérin-Méneville, Mém. de la Soc. d'Hist. Nat. de Paris*, iv., 1828.

Edwards, Ann. des Sc. Nat. xx. p. 393; *Hist. des Crust.* iii. p. 84.

Cephalon transversely ovate. Pereion not largely distended. Pleon slender. Eyes occupying the entire cephalon, dorsally separated. Antennæ subequal, as long as the cephalon is deep; superior pair having the flagellum not articulated: inferior pair having the

flagellum more or less articulated. Mandible having an appendage. First pair of gnathopoda short, tolerably robust; carpus not having the anterior margin inferiorly produced; second pair having the carpus on the inferior angle anteriorly produced. First pair of pereiopoda having the carpus dilated; propodos narrow, and capable of being inflected against the carpus: second pair like the first: third pair twice the length of the second; carpus very long; propodos longer than the carpus, fringed along the anterior margin with a comb-like series of teeth, and capable of impinging against the anterior margin of the carpus: fourth and fifth pairs subequal, of the same form as the third, but not more than half the length. Three posterior pairs of pleopoda subequal, the last being the longest; rami double, lanceolate. Telson small, squamose.

Dana has placed this genus among the PHROSININÆ, or second division of PHRONIMIDÆ, in his arrangement. It appears to me that the progression is so gradual from those species of *Hyperia* in which the pereiopoda are of equal length, through those which are unequal, as in *Hyperia oblivia*, to the genera *Vibilia*, *Cyllopus*, and *Themisto*, that no natural division exists where any separation can be made with advantage, or without infringing upon other characters of more importance.

1. Themisto antarctica. (PLATE L. fig. 8.)

Themisto antarctica, *Dana, U. S. Explor. Exped.* p. 1005. pl. 69. f. 1.

Eyes reddish. Superior pair of antennæ having the peduncle very short, the second joint being covered by the first; peduncle uniarticulate, tapering to a point which is curved, like a strong hook; posterior portion of the inferior margin furnished with a longitudinal row of small teeth or tubercles, the inner margin furnished near the centre with a longitudinal row of long thick hairs; the superior margin near the apex slightly villose. Inferior antennæ about half as long again as the superior, and furnished with a flagellum that is formed of one long and seven short articuli. First pair of gnathopoda very short and robust, having the carpus broad; the propodos about half the breadth of the carpus, the anterior portion furnished with a few short stiff cilia, and a denticle which corresponds to the extremity of the dactylos when shut against the propodos. Second pair of gnathopoda having the carpus infero-anteriorly produced nearly to the extremity of the propodos, with the inferior margin furnished with a few hairs; propodos tapering to the extremity, and furnished with a few hairs on the superior margin; dactylos short and straight. First pair of pereiopoda three or four times as long as the gnathopoda, having the meros short, triangular; carpus broadly ovate,

the infero-anterior margin oblique, waved, and furnished with strong hairs; propodos about half the length of the carpus, arcuate, inner margin double, the most prominent, and fringed with closely set, straight, minute cilia, the outer with many equidistant, long, straight hairs; dactylos subulate. Second pair of pereiopoda resembling the first, but having the carpus slightly larger: third pair of pereiopoda twice as long as the first two; basos stout, posterior and anterior margins parallel; meros short; carpus long; propodos long, straight, slender, and flat, the anterior margin furnished with a comb-like series of teeth that increase towards the distal extremity, and a few solitary equidistant hairs; dactylos long, slender, sharp-pointed, and slightly curved: fourth pair of pereiopoda about half the length of the third, resembling it in form: fifth like the fourth, but not armed with fine teeth along the anterior margin of the propodos. Ultimate pair of pleopoda having the peduncle more than four times the length of the telson, and the rami half as long as the peduncle, with the margins scarcely serrated; penultimate pair reaching a little beyond the extremity of the peduncle of the ultimate; antepenultimate reaching a little further than the extremity of the penultimate. Telson lanceolate. Length nearly $\frac{3}{4}$ of an inch.

Hab. Lat. 62° 25′ S., long. 58° W. (*MS. label.*)

The specimens from which the description and figure are taken belong to the collection entrusted to me from the Jardin des Plantes, and were procured during the 'Expédition de la Zélée.' The description differs in some respects from that given by Dana; rather, however, in absence of detail than in distinction of any essential point. Thus, Dana describes the superior antennæ as being three-jointed, whereas in my description the second joint is said to be almost covered by the first—in fact, a small portion of the under part only being seen. Again, he says that the inferior antennæ have the flagellum a little longer than the fourth joint. The respective joints of the peduncle of the inferior antennæ in this group have not, as yet, been made out; but, in my description, that which Dana calls the fourth joint of the "base" is stated to be the first articulus of the flagellum. Dana does not say whether the flagellum is articulated or not,—an unfortunate omission, as it is one of the chief distinctions between this species as described in this Catalogue and *T. Guérinii*. The other discrepancies being unimportant, I have not hesitated to consider this species as being the same as that described by the great American carcinologist.

2. **Themisto Guérinii**, n. sp. (Plate L. fig. 9.)

Superior antennæ scarcely as long as the cephalon is deep, having the first joint of the peduncle long, the second not covered by

the first; flagellum uniarticulate, scarcely curved at the extremity, furnished through the entire length of the inferior margin with a few rudimentary denticles, on the inner surface with a row of small tubercles, and tipped at the extremity with a few hairs. Inferior antennæ much longer than the superior, and possessing a flagellum that consists of one very long articulus and one (terminal) short and pointed. First pair of gnathopoda having the carpus longer and broader than the propodos; propodos slightly arcuate, tapering, furnished at the infero-anterior angle with a marginal row of short stiff spines that correspond with the interior margin of the dactylos. Second pair of gnathopoda having the carpus inferiorly produced, about half the length of the inferior margin of the propodos. First pair of pereiopoda having the carpus broadly dilated, ovate, infero-anterior margin oblique, fringed with a few hairs; propodos arcuate, inner margin less so, single, armed at the distal extremity only with a few long and short cilia; dactylos subulate.

Length $\frac{6}{20}$ths of an inch.

Hab. (In the Atlantic?) Latitude of La Plata (*MS. label*).

The rest of the animal corresponds with the description given of *T. antarctica*. In fact, the species so much resemble each other, that, had not their respective size and locality been very distinct, they probably would have been passed over as varieties of the same.

This specimen is also one of those belonging to the valuable collection in the Museum of the Jardin des Plantes. It was collected during the first 'Expédition de l'Astrolabe.' It is named in honour of the founder of the genus, to whom I am indebted for permission to examine his large collection and drawings of Amphipoda.

3. **Themisto Gaudichaudii.** (Plate L. fig. 10.)

Themisto Gaudichaudii, *Guérin-Méneville, Mém. de la Soc. d'Hist. Nat. de Paris*, iv. pl. 23. f. c.
M.-Edwards, Ann. des Sc. Nat. xx.; *Hist. des Crust.* iii. p. 84.

Cephalon round. Superior antennæ about the length of the cephalon, stouter than the inferior, and composed of four joints; the first is about one-third the length of the antennæ, the second and third are short, and the fourth (flagellum) is longer than all, tapering to the point and curving downwards. Inferior antennæ twice the length of the superior, and also composed of four joints, of which the first is very short, the second longer, the third as long as the first two, and the fourth (flagellum) longer than the three preceding; the flagellum seems to be composed, as in the superior antennæ, of a great number of short articuli. First pair of gnathopoda not differ-

ing from *T. Guérinii*, except that the small spinules on the distal extremity of the inferior margin of the propodos are not figured or described. Second pair of gnathopoda having the carpus with the superior margin depressed and the infero-anterior angle produced as far as the extremity of the propodos. First two pairs of pereiopoda having the carpi subtriangular rather than oval, as described in *T. antarctica* and *T. Guérinii*, and the propoda longer than the carpi. In other points this species, which has been fully and carefully described by M. Guérin-Méneville in the memoir quoted, does not differ from *T. antarctica*.

Length 9 lines.

Hab. Coast of Malouines Isle, where it was taken by M. Gaudichaud, after whom the species was named by the author.

4. **Themisto arctica.** (Plate L. fig. 11.)

Themisto arctica, *Kröyer, Grönl. Amfip.* p. 63. pl. 4. f. 16.
Edwards, Hist. des Crust. iii. p. 85.

Superior antennæ having the flagellum not annulate. First pair of gnathopoda obtuse: second pair resembling the first, not prehensile. Carpus of the first two pairs of pereiopoda having the inferior margin serrated. Telson acutely triangular. The rest of the animal resembling *T. antarctica*.

Hab. Greenland (*Kröyer*). In the stomach of a Seal at Port Kennedy (*Dr. Walker, Journ. R. Dublin Soc.* 1860, p. 68).

The above description is dependent for its correctness on those of Kröyer and M.-Edwards. The figure is from Kröyer in the work quoted.

5. **Themisto crassicornis.** (Plate L. fig. 12.)

Themisto crassicornis, *Kröyer, Grönl. Amfip.* p. 67. pl. 4. f. 17.
Edwards, Hist. des Crust. iii. p. 85.

Superior antennæ very short, thick, biarticulate (?), and ciliated on the border. Inferior antennæ having a flagellum that consists of one short and one (terminal) long articulus. First two pairs of pereiopoda having the carpi subovate, smooth and unarmed along the inferior margin.

Hab. Greenland (*Kröyer*).

As in the preceding, I am here indebted to the descriptions of Kröyer and M.-Edwards. The parts figured are from Kröyer's work above quoted.

Fam. 2. PHRONIMIDÆ.

Inferior antennæ obsolete, in one sex at least. Third pair of pereiopoda developed into a more or less perfectly chelate organ.

This family corresponds with Dana's, exclusively of the genus *Phoreus*. It may be conveniently divided into two subfamilies.

Subfamily 1. PHRONIMIDES.

Having the three posterior pairs of pleopoda biramous; rami lanceolate.

This subfamily corresponds with Dana's division PHRONIMINÆ, exclusively of the genus *Primno*.

1. PHRONIMA.

Phronima, *Latreille, Hist. Nat. Crust.* vi. p. 289, 1803.
Phronyma, *Leach, Sam. Ent. U. Comp.* p. 101.

Cephalon large, broad at the top, tapering inferiorly to the oral apparatus. Pereion broad and flat. Pleon narrow. Eyes on the dorsal surface of the cephalon. Superior antennæ short, two-jointed; inferior antennæ obsolete. Mandibles without an appendage. Gnathopoda more or less complexly subchelate. Pereiopoda consisting of but six joints: first two pairs of pereiopoda simple: third having the dactylos fused with the propodos; the propodos and carpus developed into a perfectly-formed chela: fourth and fifth pairs uniform, shorter than the third. Three posterior pairs of pleopoda biramous, lanceolate. Telson single.

1. **Phronima sedentaria.** (PLATE LI. fig. 1.) B.M.

Cancer sedentarius, *Forskal, Descript. Anim.* p. 95.
Cancer (Gammarellus) sedentarius, *Herbst, Naturg. der Krabben, &c.* ii. pl. 37. f. 8.
Phronima sedentaria, *Latreille, Gen. Crust. et Ins.* i. p. 36. pl. 2; *Hist. Nat. des Crust.* vi. p. 289.
Lamarck, Hist. des Anim. sans Vert. v. p. 197.
Desmarest, Consid. sur les Crust. p. 257. pl. 45. f. 1 (after *Risso*).
Edwards, Ann. des Sc. Nat. xx. p. 394, (2nd ser.) iii. pl. 14. f. 9; *Règne Anim. Cuvier*, 3rd ed. pl. 58. f. 8; *Hist. des Crust.* iii. p. 93. pl. 30. f. 13.
Lucas, Expl. dans l'Algérie, t. 5. f. 5.
White, Cat. Crust. B. M. 1847, p. 50.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.

Antennæ not so long as the cephalon; first joint short, second four times as long. First pair of gnathopoda having the meros inferiorly produced, with the margin serrated; carpus infero-anteriorly pro-

duced to nearly half the length of the propodos; propodos cylindrical, arcuate, slightly tapering, serrated on the inferior margin with small teeth that gradually increase anteriorly to every fourth or fifth denticle; dactylos short, terminating in a double point, and flanked at the posterior extremity with *dactyloptera**, having the inferior margin of the outer finely pectinated, and of the inner finely serrated: second pair resembling the first, but longer, and having the carpus not so prominently produced. First pair of perciopoda as long again as the gnathopoda, cylindrical, tapering; dactylos minute: second pair like the first, but longer and more robust: third pair having the carpus antero-distally produced to nearly the length of the propodos, cylindrical, robust, tapering, curved, inner margin subcentrally furnished with a projecting tubercle that is tuberculated on the apex and posterior margin, and on the concave margin behind it; propodos long, slender, tapering to a point, arcuate, the inner margin being furnished with a tubercle that impinges against that on the carpal process on the distal surface, and tuberculated on the top and on the distal margin as well as the concave surface beyond the tubercle; dactylos obsolete. Two posterior pairs of perciopoda subequal, having the basa long, remaining joints short. Penultimate pair of pleopoda shorter than the other two. Telson rudimentary.

Length 1 inch.

Hab. Nice (*Risso*); Burray, Shetland Islands (*Dr. Fleming*); Bay of Naples (*Mr. Pratt*).

The figure in this Catalogue is taken from a specimen in the British Museum, from an unknown locality. It appears to be identical with that taken by Dr. Fleming, in the collection of British Amphipoda in the Museum. I have compared it with specimens, entrusted to me from the Jardin des Plantes, found at Nice, and I can perceive none but microscopic differences in the strength of the armature—the tubercles and serrature being more prominent on the specimen from Nice than on that in the British Museum. Risso describes *P. sedentaria* as being transparent, shining, and covered with red spots. Desmarest states it to be found in the cavities of *Pyrosoma* and *Beroë*.

2. Phronima custos. (Plate LI. fig. 2.) B.M.

Phronima custos, *Risso, Hist. des Crust. de Nice,* p. 121. pl. 2. f. 3.
Desmarest, Consid. sur les Crust. p. 93.
Edwards, Hist. des Crust. iii. p. 93.

Third pair of perciopoda broader than in *P. sedentaria*, and having

* This name is suggested for the two little wing-like plates on each pair of gnathopoda, and which have not hitherto been described by authors.

the tubercle on the carpal process more tooth-like in form, and that upon the propodos less prominent and smooth.

Hab. Nice ; in the cavities of Medusæ (*Risso, Desmarest*).

Risso describes this species as being whitish. In all other respects it corresponds very closely with *P. sedentaria*.

The descriptions given by authors of this and the preceding species appear adapted for either. Without having examined the typical specimens, I can only assume them to be as here named—if, indeed, they are not varieties of the same species only.

3. **Phronima Borneensis**, n. s. (Plate LI. fig. 3.) B.M.

Phronima Atlantica, *White, Cat. Crust. B. M.* 1850.

This species resembles *P. custos* in the size of the chelate development of the third pair of perciopoda and in the form of the tubercle on the fixed ramus, and *P. sedentaria* in the form of the crenulated tubercle on the moveable ramus.

I can detect no other variation of form in these species from very distant localities: and the union of the specific characters of both the Western species in that from the Eastern Seas suggests the idea, in spite of their distant habitats, that the three forms may be but varieties of one species.

Hab. Borneo. Presented to the British Museum by the Lords of the Admiralty.

4. **Phronima Atlantica.** (Plate LI. fig. 4.) B.M.

Phronima Atlantica, *Guérin-Méneville, Iconogr.* pl. 25. f. 4; *Mag. Zool.* cl. vii. pl. 18. f. 1.
Edwards, Hist. des Crust. iii. p. 93.

Third pair of perciopoda having two large tubercular teeth on the inferior margin of the carpal or fixed process.

Hab. S. Atlantic (*Capt. Stanley*).

Subfamily 2. PHROSINIDES.

Having the three posterior pairs of pleopoda foliaceous and membranous.

This subfamily corresponds with Dana's second division Phrosininæ, exclusively of the genus *Themisto*.

2. PHROSINA.

Phrosina, *Risso, Hist. Nat. de l'Europe Mérid.* v. p. 91.
Dactylocera, *Edwards, Ann. des Sc. Nat.* xx. p. 293.
Edwards, Ann. des Sc. Nat. xx. p. 393 ; *Hist. des Crust.* iii. p. 89.

Cephalon with the antero-superior margin laterally produced to an

angle on each side. Pereion having the first two segments fused together. Mandibles without an appendage. Eyes large. Superior antennæ rudimentary; inferior antennæ obsolete. Gnathopoda small, not subchelate. First four pairs of pereiopoda consisting of but six joints, the terminal one probably being the propodos and dactylos fused together; carpi dilated: fifth pair not developed from the basos. Three posterior pairs of pleopoda single-branched, uniarticulate, membranous, lamelliform. Telson single, membranous.

Risso says that these Crustacea are eaten as a luxury, and, moreover, serve as an article of food to the inhabitants on the shores of the Mediterranean, where they are most common.

1. Phrosina semilunata. (Plate LI. fig. 5.) B.M.

Phrosina semilunata, *Risso, Journ. de Physique*, p. 245, 1822; *Hist. de l'Europe Mérid.* p. 5. pl. 3. f. 10–12.

Pleon exhibiting traces of a dorsal carina; fourth segment produced to a distinct tooth. Eyes pressed towards the inferior margin of the cephalon. Superior antennæ rudimentary, consisting of one short basal and a longer terminal joint, situate beneath the horns of the semilunar notch: inferior antennæ obsolete. Mandibles having the incisive margins evenly corrugated, flanked by a strong tooth on each side; the molar tubercle developed into a large squamiform perpendicular plate fringed with hair. Gnathopoda subequal, small, slender, not subchelate. First pair of pereiopoda nearly as long again as the gnathopoda, having the ischium antero-distally produced to a strong tooth; meros likewise so produced; carpus subtriangular, antero-inferior margin obtusely serrated, inferior angle developed into a strong tooth-like process; propodos and dactylos fused together, long, tapering, and slightly arcuate. Second pair of pereiopoda like the first, but having the inferior distal angle of the meros produced to a sharp tooth; carpus broad, tapering, armed inferiorly with strong, sharp teeth. Third pair longer than the second, having the basos anteriorly dilated; meros dilated, postero-distally produced to a long sharp process; carpus ovate, not produced postero-distally to a long tooth, anteriorly deeply denticulated; propodos and dactylos fused into one long, slightly-curved styliform organ. Fourth pair like the third, but shorter and less conspicuously characteristic. Fifth pair having the coxa rudimentary; the basos large, ovate; the rest of the joints obsolete, being represented only by a small papilla. Three posterior pairs of pleopoda without peduncles, consisting of single,

long-ovate, membranous, leaf-like plates. Telson exhibiting the same character.

Length 1 inch.

Hab. Atlantic, lat. 8° S., long. 46° E. (*Mr. J. Cranch*); Congo Expedition; Nice (*Risso*); Cape of Good Hope (*Paris Collection*).

On a careful dissection of this species, I have not been able to detect even the rudiments of the inferior antennæ. Milne-Edwards considers the antennæ present as being those of the inferior pair, and the superior pair to be represented by the horn-like prolongations of the superior margin of the cephalon. I have stated above that the propoda and the dactyla are fused together in the pereiopoda. In all the pereiopoda there is one joint less than usual, but I cannot determine which is absent; it may be that the ischium is wanting; but observing it to be almost universal in this division that prehensile power consists in the propodos impinging against the carpus, and that this is the case in *Primno*, a very closely allied genus, I believe the description that I have given most likely to be correct.

2. **Phrosina Nicetensis.** (Plate LI. fig. 6.) B.M.

Phrosina Nicetensis, *Edwards, Hist. des Crust.* iii. p. 91.
Dactylocera Nicetensis, *Edwards, Ann. des Sc. Nat.* xx. p. 293; *Atlas du Règne Animal de Cuvier*, pl. 58. f. 2.

This species very much resembles *P. semilunata*, but differs in having a dorsal median tooth on the posterior margin of the third segment of the pleon as well as on the fourth; in the second pair of pereiopoda having the carpus shorter and more triangular, and in having the posterior distal extremity produced into a strong tooth in the third and fourth pairs of pereiopoda.

Length $\frac{17}{20}$ths of an inch.

Hab. Mediterranean (*Edwards*); South of Europe (*specimen in the B. M.*); Cape of Good Hope (*specimen in the Paris Collection*).

The little difference between this species and *P. semilunata*, together with their having been taken in the same localities, if not associated*, suggests the idea that they are merely varieties of one species.

3. **Phrosina longispina**, n. s. (Plate LI. fig. 7.)

First pair of pereiopoda having the carpus large, increasing towards the distal extremity, against which the fused propodos and dactylos closely impinge; anterior margin slightly crenulated; inferior angle produced to an outwardly directed blunt tooth. Second

* Both species, from the Cape of Good Hope, were in the same bottle, which contained only the two specimens.

pair of pereiopoda resembling the first, but having the carpus longer and the inferior angle not so prominent. Third pair having the carpus with the anterior margin subparallel with the posterior; anterior margin oblique, serrated with four large and two small teeth; tooth of inferior angle largest and outwardly directed. Fourth pair of pereiopoda having the meros with the antero-distal angle produced as long as the carpus; carpus long, gradually increasing in diameter, antero-distal margin denticulated and produced towards the inferior angle; tooth of the inferior angle considerably the longest, directed straight forward; anterior margin of the united propodos and dactylos rugose.

Length $\frac{1}{2}$ an inch.

Hab. Found in the stomach of a shark, lat. 26° 27′ S., long. 99° W.

In all other respects this species resembles the preceding.

Doubtful Species.

4. Phrosina macrophthalma.

Phrosina macrophthalma, *Risso, Journ. de Phys.* Oct. 1822, p. 245.
Desmarest, Consid. sur les Crust. p. 25.

"Body oblong, of a violet-red, having the cephalon very transparent, not horned. Eyes very large, oval, and black.

"Length about 3 lines.

"*Hab.* Found by Risso on *Pyrosoma elegans*, in February and July. In the latter month the female carries a great number of very small globular eggs."—*Desmarest.*

This species probably belongs to the genus *Anchylomera*.

3. PRIMNO.

Primno, *Guérin, Mag. de Zool.* cl. vii., 1836.
Edwards, Hist. des Crust. iii. p. 81.

Superior antennæ as long as the cephalon. Inferior antennæ obsolete. Gnathopoda not subchelate, nor very small. First two pairs of pereiopoda having the carpi not dilated; third pair twice as long as the preceding, and having the carpus largely dilated and armed, propodos and dactylos not fused together; fourth pair considerably smaller, not having the carpus dilated; fifth pair much smaller. Three posterior pairs of pleopoda consisting each of a uniarticulate membranous lamella. Telson single.

This genus is distinguished from *Phrosina* by the smallness of the first two pairs of pereiopoda, the developed character of the fifth pair, and in having the dactyla not fused with the propoda.

1. Primno macropa. (Plate LI. fig. 8.)

Primno macropa, *Guérin, Mag. de Zool.* vii. 1836, pl. 17. f. 1.

"Superior antennæ longer than the cephalon. Bases of the second pair of gnathopoda dilated. Third pair of pereiopoda very long, more than as long again as the preceding, having the carpus very long and broad, the anterior margin armed with alternately one long and two or three short teeth; propodos long, slender; dactylos short, slender, pointed: fourth pair scarcely more than half the length of the third; carpus not dilated, having the anterior margin serrated: fifth pair shorter than the fourth, slender and feeble. Three posterior pairs of pleopoda foliaceous; antepenultimate pair pointed. Telson ovate.

"Length $\frac{6}{20}$ths of an inch.

"*Hab.* Chili."—*Guérin.*

4. ANCHYLOMERA.

Anchylomera, *Edwards, Ann. des Sc. Nat.* xx. p. 394.
Hieraconyx, *Guérin, Mag. de Zool.* vii. 1836 (male).

Cephalon large, transversely ovate. Eyes occupying nearly the whole of the cephalon, but not united in the median line. Antennæ in one sex (male?) as long as the cephalon, in the other short, rudimentary. Gnathopoda having the propoda with the inferior margin directed horizontally, not subchelate. First two pairs of pereiopoda complexly subchelate: third pair large, robust, having the basos largely dilated, pentangular; carpus dilated, against the anterior margin of which the propodos impinges: fourth pair shorter than the third, not dilated: fifth still shorter. Three posterior pairs of pleopoda consisting of single foliaceous membranous plates.

Hieraconyx appears to be the male of *Anchylomera*.

1. Anchylomera antipodes, n. s.

(Plate LI. fig. 9, male; fig. 10, female.) B.M.

Female.—Animal robust. Cephalon deeper than the pereion. First segment of pereion absent, fifth twice as broad as the others. Superior antennæ represented by two minute tubercles. Inferior antennæ obsolete. Gnathopoda having the propoda gradually tapering both above and below to a point; dactyla having a small straight joint. First pair of pereiopoda having the carpus moderately broad and anteriorly truncate; anterior and inferior margins serrated; inferior margin coarsely serrated, the interdental spaces being

serrated with more minute teeth. Second pair of pereiopoda having the carpus triangular; inferior outer angle considerably produced, having the anterior and inferior margins serrated; propodos serrated on the inferior margin, which impinges against the outer margin of the carpus; dactylos styliform. Third pair of pereiopoda having the basos pentagon-shaped; carpus triangular, distal margin armed with five or six blunt teeth and a sharp one at the inferior angle; propodos not longer than the distal margin of the carpus; dactylos short, sharp. Fourth pair of pereiopoda having the basos with the anterior margin considerably excavate, articulating postero-subapically with the ischium; carpus broad-ovate, inferior margin serrated with a few coarse teeth and some fine intermediate denticles; propodos narrow; dactylos styliform. Fifth pair of pereiopoda consisting of the basos only, which is longer than broad.

Length $\frac{5}{20}$ths of an inch.

Hab. Near the antipodes, in lat. 58° S., long. 172° W. (*Mr. Rayner, Surgeon H.M.S. Herald*).

Male.—Animal rather slender. Cephalon scarcely deeper than the pereion. First segment of the pereion absent; fifth as broad as the two preceding. Antennæ subequal, longer than the pereion, slender, filiform. Gnathopoda having the propoda pear-shaped, tapering anteriorly; dactyla short. All the other poda* resemble those of the female, except that the serrature upon the margin, when present, is uniformly regular.

Length $\frac{5}{20}$ths of an inch.

The specimens that are here considered male and female were taken in the same locality, and preserved in the same collection by Mr. Rayner, so that we may assume that they were found associated.

2. Anchylomera Blossevillei. (Plate LII. fig. 1.)

Anchylomera Blossevillei, *Edwards, Hist. des Crust.* iii. p. 87.

Male.—Antennæ nearly as long as the pereion: superior pair formed of a two-jointed peduncle and a flagellum consisting of forty articuli: inferior pair bent; peduncle consisting of three joints, flagellum of fifty articuli. First pair of gnathopoda shorter than the second. Third pair of pereiopoda triangular; the antero-inferior margin

* The third pair of pereiopoda is broken in the only male specimen in the collection. It is therefore an assumption that the third pair bears the same relation as the others to their representative in the female.

oblique, waved, unarmed: fourth pair resembling, but shorter than, the third: fifth still shorter.

Length $\frac{5}{20}$ths of an inch.

Hab. Indian Ocean.

The figure of this species is taken from a damaged specimen in the Museum at Paris; the description is from the same source, aided by that of Milne-Edwards.

It is named after M. de Blosseville, who perished in the Arctic Regions.

3. **Anchylomera Hunteri.** (Plate LII. fig. 2.)

Anchylomera Hunteri, *Edwards, Ann. des Sc. Nat.* xx. p. 394; *Hist. des Crust.* iii. p. 88. pl. 30. f. 4.

"The body is more curved than in *A. Blossevillei*; the antennæ are scarcely longer than the cephalon, and the flagella consist of only fifteen articuli. Gnathopoda subequal. Third pair of pereiopoda having the antero-distal angle produced into a strong tooth, more prominent than those upon the antero-distal margin; the propodos and dactylos fused together, short, pointed.

"Length $\frac{6}{20}$ths of an inch.

"*Hab.* Isle of Bourbon."—*Edwards.*

4. **Anchylomera abbreviata.** (Plate LII. fig. 3.) B.M.

Hieraconyx abbreviatus, *Guérin, Mag. de Zool.* cl. vii. pl. 17. f. 2. *Edwards, Hist. des Crust.* iii. p. 88.

Antennæ as long as the cephalon is deep. Gnathopoda subequal. First two pairs of pereiopoda having the carpi triangulate, the infero-distal angle produced; inferior and distal margins minutely serrated: third pair having the basos moderately dilated; carpus ovate, anterior margin denticulated; propodos and dactylos not fused together: fourth pair shorter than the third: fifth almost rudimentary. Three posterior pairs of pleopoda having the lamelliform rami long-ovate. Telson short, rounded, as broad as long.

Length $\frac{6}{20}$ths of an inch.

Hab. Taken between Ile Malouines and Port Jackson (*M. Gaudichaud*). S. Atlantic (and near Mauritius?) (*Mr. Rayner*).

5. **Anchylomera sedentaria.** (Plate LII. fig. 4.)

Phronima sedentaria, *Costa, Pochi Crust. del. Messina.*

Superior antennæ two-thirds the length of the inferior. Inferior antennæ about half the length of the animal.

Hab. Mediterranean (*Costa*).

I only know this species from the figure in the work quoted, which is so very imperfectly drawn as to make it unwise to trust to it; but though incorrect, it evidently does not belong to the genus *Phronima*, and appears to differ from the preceding species of this genus.

I am inclined to think that *Cheiropristis Messanensis* of Cocco belongs to this genus, and probably to this species.

6. Anchylomera purpurea. (Plate LII. fig. 5.)

Anchylomera purpurea, *Dana, U. S. Explor. Exped.* p. 1004. pl. 68. f. 9.

"Antennæ about as long as the body. Carpi of first and second pairs of pereiopoda subtriangular, that of the first with an acute point as an immoveable finger, that of the second with this finger elongate and slender; propoda a little longer than the surface on which they close; dactyla rather long. Third pair of pereiopoda very large; basos oblong, pentagonal, with the sides a little concave, narrowed towards the apex, where it is but little wider than the next joint; carpus oblong, triangular, straight and dentate within; propodos longer than the carpus; dactylos rather long. Fourth pair of pereiopoda long; carpus rather long, subcylindrical; basos acute at the apex, and posterior basal angle rounded. Fifth pair weak; basos a little longer than the following part.

"Length 2 lines.

"*Hab.* Atlantic, in lat. 27° S., long. 45° 10′ W., off the Brazilian coast. Collected January 1839."—*Dana.*

7. Anchylomera Thyropoda. (Plate LII. fig. 6.)

Anchylomera Thyropoda, *Dana, U. S. Explor. Exped.* p. 1004. pl. 68. f. 10.

"Cephalon transverse. Antennæ (probably not adult) very short, without a flagellum. Second pair of gnathopoda longer than first, subulate. First and second pairs of pereiopoda having the carpi triangulate, inner margins very finely serrulate or spinulose; propoda not longer than anterior margin. Third pair of pereiopoda very large; basos oblong, pentagonal, at apex but little wider than succeeding joint, and entire, sides a little excavate; carpus oblongo-triangular, antero-distal margin dentate, external tooth a little the largest; propodos much shorter than palm. Fourth pair of pereiopoda of moderate size; ischium, meros and carpus short, subequal. Fifth pair of pereiopoda obsolete, excepting basos. Caudal lamellæ broad elliptical, some of them ciliate, entire.

"Length 1 line.

"Atlantic, in lat. 39° S., long. 54° W., January 1839."—*Dana.*

Fam. 3. PLATYSCELIDÆ.

Typhidæ, *Dana, U. S. Explor. Exped.* p. 1442.
Spence Bate, Brit. Assoc. Report, 1855; *Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
Hypérinés anormales, *M.-Edwards, Hist. des Crust.* iii. p. 94.

Cephalon round. Eyes large. Antennæ attached to the inferior surface. Epistoma proboscidiform; oral appendages rudimentary. Gnathopoda complexly subchelate. First two pairs of pereiopoda simple; two succeeding pairs having the basa largely dilated; fifth pair imperfectly developed. Posterior pleopoda foliaceous.

The name *Typhis*, given to a genus in this family, having been replaced by another, that of the family must necessarily be changed; I have therefore chosen the name of a genus which I have had the opportunity of examining most, and which typifies the most conspicuous character in the family.

This family coincides with the first two divisions of Milne-Edwards's Hypérinés anormales, and with the first two of Dana's family Typhidæ.

Edwards and Dana have separated this family into two divisions, exclusive of Oxycephalinæ, corresponding with Typhinæ and Pronoinæ (Dana); but these divisions appear to me to run so gradually into each other, that it is difficult to say where the one ends and the other begins.

1. THYROPUS.

Typhis, *Risso, Crust. de Nice,* p. 122, 1816.
Edwards, Ann. des Sc. Nat. xx. p. 395; *Hist. des Crust.* iii. p. 94.
Thyropus, *Dana, U. S. Explor. Exped.* p. 1012.

Cephalon transversely oval. Pereion broadly distended. Pleon considerably narrower than the pereion. Eyes large. Superior antennæ short. Inferior antennæ long, consisting of five joints, which inflect upon one another when folded and hid beneath the cephalon. Gnathopoda complexly subchelate; carpi having the infero-anterior angle anteriorly produced to antagonize with the extremity of the dactyla. First two pairs of pereiopoda slender, cylindrical: third pair having the basos considerably dilated; ischium subapically articulated at the posterior margin: fourth pair having the basos dilated to a greater extent than the previous pair, and having the ischium articulated near the middle of the posterior margin: fifth pair having the basos short, scarcely dilated; ischium articulating at the apex; the other joints not developed. Three posterior pairs of pleopoda having the rami foliaceous and membranous.

In consequence of the name *Typhis* having been given to a genus of Mollusca by Montagu prior to the date at which Risso named this genus, I have adopted Dana's synonym.

1. Thyropus ovoides. (Plate LII. fig. 7.)

Typhis ovoides, *Risso, Crust. de Nice*, p. 122. pl. 2. f. 9.
Edwards, Hist. des Crust. iii. p. 97.

First segment of the pereion short. The last two and the first three of the pleon rounded in the centre, giving a corrugated appearance to the dorsal surface. Superior antennæ having a peduncle of three joints, the middle joint being the shortest, the other two directed at right angles from one another, forming an inverted curve; inferior margin thickly covered with hairs, and subapically excavated on the upper margin to articulate with the flagellum; flagellum minute, consisting of three articuli. Inferior antennæ five-jointed; second joint double the length of the first; third longer than the second; fourth about one-third the length of the third; fifth scarcely half the length of the fourth. Gnathopoda subequal: first pair having the carpus infero-anteriorly produced to half the length of the propodos, with the inferior and anterior margins strongly serrated; propodos not so long as the carpus, narrow-elliptical in form, with the inferior margin strongly serrated; dactylos short: second pair differing from the first only in being a little longer and not quite so robust. First two pairs of pereiopoda slender, cylindrical, having the mera, carpi and propoda gradually decreasing in length; dactyla short, sharp, and capable of being inflected against the propoda, where a small denticle increases its prehensile capability. Third pair of pereiopoda having the basos longer than the body is deep, subelliptic, terminating in an obtuse point, near which the ischium articulates internally and posteriorly, which, together with the remaining joints, is scarcely more than half the length of the basos, against the inner side of which it is reversely inflected. Fourth pair of pereiopoda having the basos as large again as that of the third, terminating in a rounded apex; the ischium articulates about halfway on the internal surface between the centre and the posterior margin, and rather more than half the length of the basos from the body; remaining joints very short, together equalling about one-fourth the length of the basos; carpus and propodos with the margins on the flexible side serrated. Fifth pair of pereiopoda short, about half the depth of the body, scarcely dilated, narrow, tipped with a small biarticulate tubercle that represents the undeveloped portion of the limb. Three posterior pairs of pleopoda biramous; rami membranous.

Length $\frac{9}{20}$ths of an inch.

Hab. Taken 150 leagues south-west of the Azores by Capt. Dumunier. Nice (*Risso*).

The description that Risso has given is not so complete as to enable me to do more than assume this to be the species, with which his figure corresponds in general aspect.

2. Thyropus ferus. (Plate LII. fig. 8.)

Typhis ferus, *Edwards, Ann. des Sc. Nat.* xx. p. 395. pl. 11. f. 8; *Hist. des Crust.* iii. p. 96.
Guérin, Iconogr. Crust. pl. 27. f. 8.
Thyropus diaphanus, *Dana, U. S. Explor. Exped.* p. 1013. pl. 169. f. 4.

"Superior antennæ very short; first joint small, and forming nearly a right angle with the second, which is large, compressed, of an oval form, and furnished upon the external border with long hairs; the other joints slender, cylindrical, and constituting a small terminal flagellum, inserted at the extremity upon a kind of disk. First joint of the inferior antennæ not so long as, but stouter than, the two following, which are nearly equal, and longer than the fourth and fifth together. Mandibles large, having an appendage with three joints, of which the last two are almost of the same length and are nearly as stout as the first. First pair of gnathopoda larger and shorter than, but of the same form as, the second, having the carpus inferiorly produced nearly to the extremity of the propodos. Fourth pair of pereiopoda nearly twice as large as the preceding; three posterior pairs of pereiopoda not having the same form, and scarcely passing beyond the extremity of the triangular telson; antepenultimate pair having the peduncle long, cylindrical, and terminating in two ovate pointed lamellæ; penultimate pair having a small peduncle and two large ovate lamellæ; ultimate pair having the peduncle short and the lamelliform rami lanceolate."—*Edwards.*

Length about 6 lines (*Edwards*): when extended, $\frac{1}{4}$ of an inch; when folded, $\frac{1}{8}$ of an inch (*Dana*).

Hab. In the latitude of the Canary Islands (*Edwards*). Atlantic, in lat. 4° 25′ S., long. 21° 30′ W., Nov. 7, 1838 (*Dana*). St. Helena (*MS. label, Museum of Jardin des Plantes*).

The only character in Dana's description which differs from that of M.-Edwards, is that the last joint of the base of the superior antennæ is stated by Dana to be multiarticulate, which I am inclined to believe is a misconception on the part of that generally accurate observer.

According to M.-Edwards's description and figure, this species differs from *T. ovoides* chiefly in the respective lengths of the joints of the inferior antennæ, and in having the gnathopoda furnished with fine hairs instead of having the carpus and propodos serrated, as in the specimen I have adopted as being that of *T. ovoides*, Risso.

3. Thyropus rapax.

Typhis rapax, *Edwards, Ann. des Sc. Nat.* xx. p. 395; *Hist. des Crust.* iii. p. 97.

"This species is similar to *T. ferus*. First pair of gnathopoda having the carpus not produced inferiorly: second pair having the carpus produced inferiorly, nearly as long as the propodos. Basos of the fourth pair of pereiopoda not so largely developed as that of the third pair. Lamelliform rami of the three posterior pairs of pleopoda long, sharp, and lanceolate.

"This species was found in the latitude of the Canary Islands."—*Edwards.*

2. PLATYSCELUS*, n. g.

Cephalon transversely ovate. Pereion distended; first segment narrower than the cephalon. Pleon much narrower than the pereion, having the fourth and fifth segments coalescing, the fifth and sixth pairs of pleopoda being attached to the posterior margin; sixth segment and telson fused together, the posterior pair of pleopoda being attached to the under surface near the middle of the segment. Superior antennæ short, consisting of a peduncle and a flagellum. Inferior antennæ not longer than the cephalon, consisting of four joints, concealed beneath the cephalon, not folded. Mandibles without an appendage. Third pair of pereiopoda having the basos largely dilated, and the remaining joints shorter than the basos; fourth pair having the basos twice as large as the third, the remaining joints not half so long as the basos; fifth pair membranous, a small tubercle representing the remaining joints. Three posterior pairs of pleopoda biramous, foliaceous, submembranous. Telson obtusely triangular.

It is with considerable hesitation that I add this genus to the family. I have only done so in consequence of Dana's distinctly stating that in *Dithyras* no portion of the three posterior pairs of pereiopoda is developed beyond the basa; in all other respects this genus corresponds very closely with that.

It appears to me to be not improbable that *Platyscelus* may prove to be the female of *Typhis*, from which it differs only in the form of the superior and length of the inferior antennæ.

1. Platyscelus Rissoinæ, n. s. (Plate LII. fig. 9.)

Cephalon rounded above anteriorly, and produced centrally downwards. Pereion greatly distended; first two segments short. Pleon much narrower than the pereion. Superior antennæ having the

* πλατὺς, broadly dilated; σκέλος, leg.

peduncle obliquely truncate, the distal extremity carrying numerous auditory cilia; flagellum consisting of a single long narrow articulus. Inferior antennæ four-jointed, having the first three joints subequal, the fourth short and terminating in a single hair. First pair of gnathopoda having the carpus broad, but not anteriorly produced, the inferior margin being coarsely, and the anterior margin finely serrated; propodos serrated along the inferior margin; dactylos short, not capable of reaching the anterior extremity of the carpus. Second pair of gnathopoda longer than the first, the carpus having the infero-anterior margin produced as long as the propodos, minutely serrated along the anterior and inferior margins; propodos coarsely serrated along the inferior margin; dactylos short, capable of antagonizing with the apex of the produced carpus. First two pairs of pereiopoda having the mera and carpi subequally long; propoda one-third the length of the carpi; dactyla short. Third pair of pereiopoda having the anterior margin of the basos not serrated, the five distal joints being but half the length of the basos, and the ischium articulating postero-subapically with it. Fourth pair of pereiopoda having the basos posteriorly arcuate and anteriorly excavate, the distal extremity obtusely rounded, the ischium articulating with the posterior margin near the centre; the remaining joints being about one-third the length of the basos, and having the flexible margin of the propodos reversely serrated. Fifth pair of pereiopoda membranous, long, and slightly curved, terminating in a small tubercle that represents the undeveloped portion of the limb. Antepenultimate pair of pleopoda having the outer margin of the peduncle serrated; rami foliaceous, equal, and distally serrated: penultimate pair having the peduncle short; rami equal, with the margins entire: ultimate pair having the peduncle short; outer ramus pointed, serrated on the inner margin; inner rami fused with the peduncle, and having the inner margin serrated alternately coarse and fine. Telson obtusely pointed. Length 1 inch.

Hab. Found in the stomach of a shark in the Pacific Ocean, in lat. 26° 27′ S., long. 99° W. Coast of Malabar (*Capt. Dumunier*, 1836).

These specimens belong to the collection entrusted to me from the Jardin des Plantes.

2. **Platyscelus serratus**, n. s. (Plate LII. figs. 10 & 11.)

Female.—Cephalon transversely ovate. Pereion much distended; first segment nearly as long as the second, but much narrower than the cephalon. Pleon considerably narrower. Superior antennæ having the peduncle truncate, the inferior distal extremity bearing a bunch

of auditory cilia; flagellum short and narrow, consisting of one long and one short terminal articulus. Inferior antennæ four-jointed; first joint longest: second about half the length of the first: third half longer than the second; fourth narrower than the preceding, as long as the second, terminating in a lanceolate joint. First pair of gnathopoda having the carpus antero-inferiorly produced nearly to the extremity of the propodos, and serrated both inferiorly and anteriorly; propodos long-ovate, and serrated both on the superior and inferior margins; dactylos short, sharp, and antagonizing with the extremity of the carpus: second pair like the first, but longer, narrower, and having the inferior angle of the carpus produced rather beyond the extremity of the propodos. First two pairs of pereiopoda having the mera stouter than the carpi, the carpi shorter than the mera and minutely pectinated on the posterior margin; propoda slightly shorter than, and not so stout as, the carpi, minutely pectinated on the posterior margin. Third pair of pereiopoda having the distal portion of the anterior margin serrated, and the ischium articulating subapically within the posterior margin; remaining joints about half the length of the basos; the meros, carpus, and propodos serrated on the flexible margin. Fourth pair of pereiopoda with the ischium articulated near the centre, the remaining joints being not quite one-fourth the length of the basos; carpus and propodos serrated on the flexible margin. Fifth pair of pereiopoda having the basos membranous, a small round tubercle representing the remaining joints. The rest of the animal appears to resemble *Platyscelus Rissoinæ*.

Length $\frac{14}{20}$ths of an inch.

Hab. Locality unrecorded. Taken by M. Morrisse of Havre.

The specimen from which this description and figure are taken is a female. I fortunately found within the incubatory pouch numerous larvæ. These differ considerably in form from the fully developed animal, as will be seen by the following description:—

Young.—Cephalon long and narrow, tapering anteriorly, having the apex reversed beneath. Pereion long, not dilated, not deeper than the cephalon. Pleon nearly as long as the pereion. Antennæ upon the inferior surface: the superior pair, just within the anterior margin, consist of two subequal joints, the basal one carrying distally two minute hairs; the terminal one truncate, the distal extremity carrying four long hairs. Inferior antennæ posterior to the superior, consisting of but a single joint, cylindrical in form, truncate at the apex, where are situated four short hairs. First pair of gnathopoda having the meros a little broader than the carpus, and the antero-inferior angle tipped with a solitary hair;

carpus with the inferior angle rounded obliquely and furnished with a single hair; propodos one-fourth the breadth of the carpus, increasing in width anteriorly, exhibiting a decided anterior margin or palm; dactylos long, sharp, slightly curved, but not capable of reaching the carpus: second pair uniform with the first. First pair of pereiopoda having the meros not longer than the ischium, and furnished with a solitary hair at the infero-distal extremity; carpus not longer or broader than the meros, having the infero-distal margin oblique and furnished with a solitary hair; propodos longer and narrower than the carpus, and having the infero-distal extremity furnished with a solitary hair that is half the length of the dactylos; dactylos nearly as long as the propodos, slender and tapering. Second pair uniform with the first. Third pair of pereiopoda having the basos distally dilated, but not broader than half its length; ischium and meros subequal in breadth and length, the latter furnished with a solitary hair; carpus tapering, the inferior angle very oblique and defined by a solitary hair; propodos narrow, straight, margins parallel, furnished with a solitary hair at the inferior distal extremity; dactylos sharp, slightly curved, nearly as long as the propodos. Fourth pair uniform with the third. Fifth pair as long as the preceding, having the basos not dilated; the three succeeding joints subequal, the carpus alone being furnished at the inferior angle with a short solitary hair; propodos longer and narrower than the carpus; dactylos obsolete. Three posterior pairs of pleopoda double-branched; rami unequal, long, narrow, straight, sharp, styliform. Telson rounded.

Length $\frac{1}{20}$th of an inch.

3. DITHYRUS.

Dithyrus, *Dana, U. S. Explor. Exped.* p. 1009.

"Pleon closing well on the inferior surface of the pereion. Cephalon transversely ovate. [Ophthalmic] pigments not large. Inferior antennæ concealed beneath the sides of the cephalon, not folded. Three posterior pairs of pereiopoda reduced to mere basa, which are very broad and clypeate. Gnathopoda [complexly] subcheliform. Pleon five-jointed. Telson triangular."—*Dana.*

This genus appears to differ from *Platyscelus* only in having the pereiopoda not developed beyond the basa.

1. Dithyrus Faba. (Plate LIII. fig. 1.)

Dithyrus Faba, *Dana, U. S. Explor. Exped.* p. 1010. pl. 69. f. 3.

"Cephalon transverse, tumid, rounded in front. [Ophthalmic] pig-

ments two, not large. Inferior antennæ slender, straight, four-jointed, first joint longest, second and third about equal, fourth shortest. Basos of third pair of pereiopoda with a very oblique truncation at extremity, apex acute; posterior margin arcuate: [basos] of fourth pair twice as large [as that of the third], obtuse at apex, ovato-lunate; posterior margin arcuate throughout, anterior margin equally excavate: [basos] of seventh pair small and slender, subensiform. Telson triangular, sides towards apex obsoletely excavate, apex subacute. Posterior pair of pleopoda articulated with under surface of segment; rami very unequal, not longer than base.

"Length, when closed up, 4 lines; when extended, about 6 lines.

"*Hab.* Taken from the stomach of a Bonito caught off the Canaries, September 1838."—*Dana.*

4. BRACHYSCELUS*, n. g.

Cephalon rounded in front. Pereion not broader than the cephalon. Pleon a little narrower than the pereion, having the fifth segment wanting, or fused with the fourth. Eyes large, encroaching on the inferior surface of the cephalon. Antennæ obsolete or very rudimentary. Gnathopoda complexly subchelate. Pereiopoda short: first two pairs small, slender, not dilated; third pair having the basos large, articulating with the ischium at the apex; fourth pair not longer than the third, basos rather larger than that of the third, articulating with the ischium at the apex; fifth pair a little shorter than the fourth, basos rather smaller than that of the fourth and articulating with the ischium at the apex, the other joints developed. Posterior pair of pleopoda biramous, foliaceous. Telson as broad at the base as the preceding segment of the pleon.

This genus differs from *Pronoë*, *Thyropus*, and *Platyscelus* in having the fifth pair of pereiopoda fully developed, and in having the antennæ obsolete. It also differs from the two latter in having the basa of the third and fourth pairs of pereiopoda not so largely developed, and in the animal generally being more compressed.

1. Brachyscelus crusculum, n. s. (Plate LIII. figs. 2 & 3.)

Female.—Cephalon laterally semi-hemispherical, rounded in front. Eyes large, inferiorly developed, and encroaching upon the inferior surface. Antennæ obsolete. First pair of gnathopoda short, having the carpus very large, broader than long, the inferior angle anteriorly

* βραχὺς, short; σκέλος, leg.

produced to half the length of the propodos, coarsely serrated both anteriorly and inferiorly, the teeth upon the inferior margin being themselves posteriorly serrated; propodos short, stout, curved, and serrated on the inferior margin; dactylos short, sharp, and capable of antagonizing with the produced extremity of the carpus. Second pair of gnathopoda resembling the first, but rather longer and a little larger, the inferior angle of the carpus more produced anteriorly, but the teeth themselves upon the inferior margin not serrated. First pair of pereiopoda feeble, slender, slightly denticulated along the posterior margin of the meros, carpus, and propodos: second pair a little longer than the first, and denticulate only on the posterior margin of the propodos: third pair having the basos dilated, but not broader than the coxa, and about one-third its length; remaining joints articulated at the extremity, and together as long as the basos: fourth pair having the basos broader, but scarcely longer, than the third; remaining joints articulated at the extremity, together scarcely as long as the basos, and having the flexible margin minutely denticulated: fifth pair having the basos dilated, nearly as large as that of the third, ovate; remaining joints articulating at the apex, together scarcely half the length of the basos; dactylos a rudimentary curved hook. Antepenultimate pair of pleopoda having the rami substyliform; penultimate pair arising within the preceding, having the rami foliaceous, lanceolate; ultimate pair foliaceous, terminating obtusely. Telson triangular, with the base as broad as the preceding segment.

Length $\frac{3}{4}$ of an inch.

Hab. Not recorded. Taken by M. Morrisse of Havre.

The animal from which the description and figure are taken is a female, in the incubatory pouch of which I found numerous young. These differ considerably from the parent. The following is the description of the young when ready to quit the pouch:—

Young.—Animal long and narrow. Cephalon anteriorly produced. Superior antennæ as long as the cephalon, consisting of four joints, the last of which is considerably narrower than the rest. Inferior antennæ obsolete. First pair of gnathopoda having the inferior angle of the carpus anteriorly produced to a sharp tooth; propodos having the inferior angle anteriorly produced to a sharp tooth, nearly as long as the dactylos, the anterior margin or palm being as long as the propodos; dactylos sharp and slightly arcuate: second pair uniform with the first. First two pairs of pereiopoda not differing materially from those of the adult, except in being proportionally larger, as, in fact, are all the poda: third pair re-

sembling the second, but longer and reversed: fourth pair having the basos not dilated; the carpus increasing towards the distal extremity; propodos broader and longer than the carpus, and having the antero-distal angle developed into a process longitudinal with, and equal in length to, the propodos, against the extremity of which the dactylos impinges and forms a perfectly chelate organ; dactylos longer than the process of the propodos, arcuate: fifth pair not half the length of the preceding, and having the dactylos represented by a spine. Three posterior pairs of pleopoda having the rami styliform. Telson narrower than the preceding segment.
Length less than $\frac{1}{20}$th of an inch.

5. THAMYRIS, n. g.

Superior antennæ short, three-jointed. Inferior antennæ obsolete. Posterior pair of pereiopoda represented by a basos in the form of a membranous scale only.

In all other respects this genus so nearly corresponds with *Brachyscelus*, that future research will probably demonstrate their closer connexion.

1. Thamyris antipodes, n. s. (Plate LIII. fig. 4.) B.M.

Superior antennæ having the second joint curved, and inflected against the first; third not longer than the second, tapering to an obtuse point, the whole lying hid against the under surface of the cephalon. First pair of gnathopoda having the ischium and meros serrated on the inferior margin; carpus infero-anteriorly produced, longer than the propodos, serrated on the anterior and inferior margins; propodos serrated on the inferior margin: second pair resembling the first, but longer. First two pairs of pereiopoda simple; third pair having the basos ovate, the remaining joints longer than the basos; fourth pair having the basos narrowest near the distal extremity, the remaining joints not so long as the basos, and serrated upon the flexible margin; fifth pair membranous.
Length $\frac{5}{20}$ths of an inch.

Hab. Near the antipodes, in lat. 58° S., long. 172° W. (*Mr. Rayner, Surgeon H.M.S. Herald*).

6. AMPHIPRONOË, n. g.

Cephalon round, anteriorly oblique. Pereion not broader than the cephalon. Pleon having the fourth and fifth segments fused into one. Superior antennæ having the peduncle three-jointed; third joint large, inferiorly convex and anteriorly produced, having the

superior margin subapically excavated to receive the short flagellum. Inferior antennæ five-jointed. First pair of gnathopoda complexly subchelate; second pair not subchelate. Third and fourth pairs of pereiopoda largely dilated, having the remaining joints as long as the basa; fifth pair rudimentary. Posterior pair of pleopoda biramous, foliaceous. Telson nearly as broad at the base as the preceding segment of the pleon.

This genus is very closely allied to *Pronoë*, but differs in the form of the superior antennæ and of the gnathopoda, and in the fusion of the fourth and fifth segments of the pleon into one.

1. **Amphipronoë cuspidata**, n. s. (Plate LIII. fig. 5.)

Three anterior segments of the pleon each postero-dorsally produced to a point, but not elevated into a tooth. Superior antennæ short, having the peduncle thickly covered on the inferior surface with long hairs; flagellum uniarticulate, tipped with two long auditory cilia. Inferior antennæ having the first three joints subequal; third superiorly fringed with equidistant cilia; fourth (damaged). First pair of gnathopoda having the meros distally broad; carpus broad, infero-anteriorly produced to half the length of the propodos, margins smooth; propodos long-ovate; dactylos arcuate, pointed: second pair having the carpus not infero-anteriorly produced. Third pair of pereiopoda having the basos dilated, a little broader than the coxa; ischium articulating at the apex; remaining joints together rather longer than the basos: fourth pair having the basos more dilated than that of the third, and with the remaining joints not so long: fifth pair short; basos dilated; remaining joints obsolete. Antepenultimate and penultimate pairs of pleopoda arising from the postero-inferior angle of the fourth segment of the pleon; ultimate reaching but little beyond the telson. Telson triangular. Length $\frac{3}{20}$ths of an inch.

Hab. In the sea near the Cape of Good Hope (taken by Captain Raynaud in Feb. 1829).

7. PRONOË.

Pronoë, *Guérin, Mag. de Zool.* vii. 1836.

"Cephalon large, filled with the eyes, rounded, advanced, having the frontal surface considerably rounded, excavated anteriorly to receive the superior antennæ, with the epistoma* rather prominent. Superior antennæ shorter than the cephalon, flat, composed of three joints, of which the first two are short. Inferior antennæ inserted near the mouth, slender, cylindrical, setaceous, and formed of five

* "Tubercule buccal."

joints bending upon each other. Gnathopoda simple, monodactyle. Pereiopoda gradually increasing in length to the third pair: first two pairs cylindrical; basa of the last three pairs large, flat, and circular; fourth pair shorter than the third; fifth having the joints after the basos represented by a tubercle. First three segments of the pleon large; three following having the appendage straight, flat, long, and terminating in two little lamellæ rounded at the extremity. Telson short and triangular."—*Condensed from Guérin.*

1. Pronoë capito. (Plate LIII. fig. 6.)

Pronoë capito, *Guérin, Mag. de Zool.* vii. 1836, pl. 17. f. 3.
Edwards, Hist. des Crust. iii.

Superior antennæ having the terminal joint long, flat, and obliquely truncate (resembling those of *Vibilia*): inferior antennæ five-jointed; first and second joints subequal, third short, fourth nearly as long as the second, terminal nearly as long as the fourth. Gnathopoda uniform, not having the carpus infero-anteriorly produced. First two pairs of pereiopoda uniform, cylindrical: third pair long, having the basos dilated; ischium articulating with the basos at its apex; remaining joints twice or thrice as long as the basos: fourth pair having the basos more dilated than the third; ischium articulating at the apex of the basos; remaining joints little longer than the basos: fifth pair short, broadly dilated; remaining joints represented by a tubercle. Posterior pair of pleopoda reaching considerably beyond the telson. Telson small, triangular, not more than one-third of the width of the preceding segment at the base.

Length $\frac{3}{4}$ of an inch.

Hab. Coast of Chili (*M. Gay*).

The description of the species depends upon the correctness of M. Guérin's figure in the work quoted.

2. Pronoë brunnea. (Plate LIII. fig. 7.)

Pronoë brunnea, *Dana, U. S. Explor. Exped.* p. 1015. pl. 69. f. 5.

"Cephalon subtriangular, not oblong, obtuse in front; pigments of the eyes nearly filling it. Pereion appearing in a dorsal view but five-jointed. Pleon six-jointed. Telson small, triangular, subacute at apex. Inferior antennæ long, five-jointed; first, second, and third joints long and equal; fourth about half shorter; fifth quite small. Basos of fourth pair of pereiopoda much the broadest, obliquely subovate, apex prominent, obtuse; remaining joints

shorter than basos: of third pair half narrower, subelliptical, anterior margin about apex serrate; remaining joints a little longer than basos: of fifth pair obliquely sublanceolate, apex truncate; next joint small and nearly round.

"Length 4 lines.

"*Hab.* Atlantic, in latitude 4° 25′ S., longitude 21° 30′ W. Collected November 7, 1838."—*Dana.*

8. LYCÆA.

Lycæa, *Dana, U. S. Explor. Exped.* p. 1017.

"Pigments of the eyes large. Inferior antennæ folded up beneath the cephalon on either side, and having the flagellum long. Gnathopoda [complexly] subcheliform. Pereiopoda of moderate length, last two pairs abbreviated; basa of three posterior pairs rather narrow. Pleon not folding against the venter."—*Dana.*

This genus closely resembles *Pronoë*, differing from it only in the character of the gnathopoda. It appears to me that the suggestion of Dana (*op. cit.* p. 986) bears quite as strongly on this genus, in relation to *Pronoë*, as it does on *Metoechus* in relation to *Hyperia*. I think it probable that research may ultimately show that some of the preceding genera (*Thamyris, Amphipronoë, Pronoë*, and *Lycæa*) are unnecessary; but since I have not seen specimens of the last two, I feel bound to accept their authors' definition.

1. Lycæa ochracea. (Plate LIII. fig. 8.)

Lycæa ochracea, *Dana, U. S. Explor. Exped.* p. 1017. pl. 69. f. 6.

"Cephalon nearly round. Pereion distinctly seven-jointed. Inferior pair of antennæ naked; first joint short; second and third long and equal; fourth very small, not oblong; the following part slender and flexible, about as long as the third joint. Pleon with a triangular and obtuse extremity. Poda all naked. First pair of gnathopoda broad, hardly oblong, inferior apex triangular: second pair of gnathopoda a little oblong, narrower than the first, subrectangular. First and second pairs of pereiopoda slender; third pair longer than fourth; fifth weak, coxa more than twice as long as the following part; basa of the three posterior pairs of pereiopoda subequal.

"Length 4 lines.

"*Hab.* Pacific, near Sunday Island, north of New Zealand. Collected April 1840, from the cavities of Salpæ."—*Dana.*

Fam. 4. PHORCIDÆ.

Cephalon rounded. Antennæ situated on the inferior margin. Third pair of pereiopoda imperfectly developed.

1. PHORCUS.

Phorcus, *Edwards, Ann. des Sc. Nat.* xx. p. 391; *Hist. des Crust.* iii. p. 79.

Cephalon obliquely ovate, increasing in depth anteriorly. Eyes occupying the infra-anterior portion of the cephalon. Superior antennæ not longer than the cephalon: inferior antennæ "rudimentary, setiform, and composed of three joints*." Oral appendages rudimentary? Gnathopoda simple, very short. First two pairs of pereiopoda longer than the gnathopoda, moderately robust; third pair long and slender, filiform; fourth pair long and very robust; fifth pair very short, rudimentary. Three posterior pairs of pleopoda biramous; rami lanceolate. Telson obsolete?

This genus appears to be distinguishable from all the other families by the filiform and imperfectly-developed character of the third pair of pereiopoda.

1. Phorcus Raynaudii. (Plate LIII. fig. 9.)

Phorcus Raynaudii, *Edwards, Ann. des Sc. Nat.* xx. p. 392; *Hist. des Crust.* iii. p. 79.

Cephalon deep, and flattened anteriorly. Superior antennæ two-thirds the length of the cephalon, thickly covered with long hair along the inferior margin, as well as upon the apex of the flagellum; peduncle long and stout; flagellum short, articulating upon the upper surface, formed of two articuli, each supporting one or two coarse hairs. Gnathopoda extremely short. First two pairs of pereiopoda twice the length of the gnathopoda, tolerably strong, but normal in their formation: third pair long, half the length of the animal, filamentary, having the basos but slightly dilated, long-quadrate, ischium short, meros long and slender, carpus of the same diameter but longer, propodos of the same length and thickness as the carpus, dactylos longer than the propodos and of the same diameter: fourth pair nearly as long as the third, being very strong and robust, having the basos long-ovate; meros broad, distally produced both anteriorly and posteriorly; carpus rather longer than the meros, but more slender;

* Edwards, Hist. des Crust. iii. p. 79. I was not able to detect the inferior antennæ in the only specimen that I have had the opportunity of examining.

propodos as long as the carpus, but slighter and anteriorly serrated; dactylos short, acute: fifth pair of pereipoda not reaching to the extremity of the meros of the preceding pair, very slender, rudimentary; basos not dilated. Ultimate pair of pleopoda having the peduncle short, scarcely as long as broad; rami half as long again as the peduncle, margins distally serrate: penultimate pair scarcely reaching beyond the distal extremity of the peduncle of the ultimate: antepenultimate reaching almost to the extremity of the ultimate, having the margins of the rami slightly serrated. Telson obsolete.

Length $\frac{4}{20}$ths of an inch.

Hab. Indian Ocean (*M. Raynaud*).

The specimen from which the description and figure are taken belongs to those entrusted to me by the authorities of the Jardin des Plantes. I am inclined to believe that it is the type from which Milne-Edwards described this genus, since it is labelled "Océan Ind., M. Raynaud, Cap Fabrè, Janvier 1829," &c., and I saw no other specimen in the Museum.

2. **Phorcus hyalocephalus.** (Plate LIII. fig. 10.)

Phorcus hyalocephalus, *Dana, U. S. Explor. Exped.* p. 1006. pl. 69. f. 2.

"Cephalon with the front rounded, and the anterior surface directed obliquely downwards and outwards. First and second segments of pereion nearly concealed. First and second pairs of pereiopoda equal, slender: third pair nearly as long as the body; last joint longest, acute; carpus shorter than meros: fourth pair long, but shorter than the third; basos large and nearly elliptical; ischium small; meros large, subelliptical, with the outer extremity deeply excavate (for articulation with the next joint), posterior apex acute, anterior obtuse; propodos a little longer than carpus, inner margin minutely serrulate; dactylos short: fifth pair slender; basos much shorter than the following part.

"Length 2 lines.

"*Hab.* Atlantic, in latitude 1° S., longitude 18° 20′ W. Collected November 5, 1838."—*Dana.*

Fam. 5. OXYCEPHALIDÆ.

Animal long, narrow. Cephalon not broad, long, anteriorly produced beyond the antennæ. Eyes filling but a portion of the cephalon. Antennæ on the inferior surface of the cephalon. Gnathopoda small.

This family may be conveniently divided into two subfamilies.

Subfam. 1. SYNOPIADES.

Having the eyes placed anteriorly to the superior antennæ.

1. SYNOPIA.

Synopia, *Dana, U. S. Explor. Exped.* p. 994.

"Front subacute. Antennæ long, and not concealed. First pair of gnathopoda [complexly] subcheliform; second pair vergiform. First two pairs of pereiopoda subprehensile, having the propoda and dactyla capable of being inflected against the carpi; other pairs of moderate size, unguiculate."—*Dana.*

1. Synopia ultramarina. (Plate LIV. fig. 1.)

Synopia ultramarina, *Dana, U. S. Explor. Exped.* p. 995. pl. 68.

"Body compressed, triangulate in front, sides of the head diverging at an angle of 50° or 60°. Superior antennæ half the length of the inferior; flagellum setose at base: inferior antennæ nearly as long as the body and very slender. Gnathopoda and first two pairs of pereiopoda ciliate below: first pair of gnathopoda smallest, meros hardly longer than the ischium, carpus broad and oblong, propodos small and nearly obovate, dactylos minute: second pair of gnathopoda slender, ending in two rather long setæ. Second pair of pereiopoda rather stout, stouter than the first; carpus broad and a little oblong, oblique at apex; dactylos short: three posterior pairs nearly equal; setæ few and short: basa of fifth and sixth pairs broad, roundish; of seventh pair narrower, the apex behind triangulately prolonged, subacute. Caudal stylets slender, the intermediate pair shortest.

"Length $\frac{1}{6}$th to $\frac{1}{12}$th of an inch.

"*Hab.* Atlantic, in latitude 8°–12° S., longitude 11°–14½° W., collected May 1842; also in latitude 4°–7° S., longitude 21°–25° W., November 1838."—*Dana.*

2. Synopia angustifrons. (Plate LIV. fig. 2.)

Synopia angustifrons, *Dana, U. S. Explor. Exped.* p. 998. pl. 68. f. 8.

"Similar to the *S. ultramarina*. Cephalon very narrow, the sides converging forward at an angle of 40° to 45°. Inferior antennæ considerably shorter than the body; flagellum consisting of ten articuli; articuli slender, cylindrical: superior pair but a little longer than base of inferior; flagellum consisting of five articuli. Second pair of pereiopoda having the carpus straight along the anterior, and arcuate on the opposite margin; propodos and dactylos slender, and nearly equal.

"Length $\frac{1}{8}$th of an inch.

"*Hab.* Pacific, in latitude 18° S., longitude 122° W. Collected August 1839."—*Dana.*

Subfam. 2. OXYCEPHALIDES.

Having the eyes situated posteriorly to the superior antennæ.

2. OXYCEPHALUS.

Oxycephalus, *Edwards, Ann. des Sc. Nat.* xx. p. 396; *Hist. des Crust.* iii. p. 99.

Body long and slender. Cephalon produced anteriorly. Antennæ situated on the inferior surface. Gnathopoda complexly subchelate. Two anterior pairs of pereiopoda simple; two succeeding having the basa dilated; the posterior diminutive. Three posterior pairs of pleopoda double-branched; rami lanceolate. Telson squamiform, triangular.

1. Oxycephalus piscator. (Plate LIV. fig. 3.)

Oxycephalus piscator, *Edwards, Ann. des Sc. Nat.* xx. p. 396; *Hist. des Crust.* iii. p. 100. pl. 30. f. 10.

"Cephalon as long as the first five segments of the pereion, tolerably broad, not narrowed behind the eyes, terminating anteriorly in a long triangular rostrum. Eyes occupying all the middle and posterior portion of the cephalon. Superior antennæ bent in the form of the letter Z; first three joints [peduncle] large, compressed, and furnished with a number of hairs; last three [flagellum] small. Inferior antennæ large, and having the same form as in *Thyropus*; but the four joints are subequal, the last being uniarticulate. First pair of gnathopoda shorter than the second; propodos very large, compressed, and with spines upon the inferior margin; dactylos not very distinct. Second pair of gnatho-

poda long, compressed; dactylos small, and not passing much beyond the extremity of the carpus, against which it impinges. Three posterior pairs of perciopoda having the basa broadly dilated, the fifth pair being not more than half the length of the preceding. Sixth segment of the pleon flat, nearly square. Telson triangular. Three posterior pairs of pleopoda short, terminating in two little lanceolate rami.

"Length about 8 lines.

"*Hab.* Indian Ocean."—*Edwards.*

2. Oxycephalus oceanus. (Plate LIV. fig. 4.)

Oxycephalus oceanus, *Guérin, Mag. de Zool.* vii. pl. 18. f. 2.
Edwards, Hist. des Crust. iii. p. 101.

"Superior antennæ oval, and terminated by a little pointed articulus. Inferior antennæ small, and composed of five equal joints. Second pair of gnathopoda scarcely longer than the first pair.

"*Hab.* Chili."—*Edwards.*

3. Oxycephalus tuberculatus, n. s. (Plate LIV. fig. 5.)

Cephalon and first segment of the pereion (wanting), all the segments having dorsally an anterior and a posterior small tubercle. Second pair of gnathopoda having the carpus produced anteriorly to quite the length of the propodos, margins smooth; propodos long-ovate; dactylos half as long as the propodos. Posterior pair of perciopoda rudimentary, not so long as the basos of the preceding pair. Antepenultimate pair of pleopoda having the rami short, serrated; penultimate not so long as the preceding, having the margins of the rami smooth; ultimate not reaching to the extremity of the telson, rami having the margins serrated. Telson acutely triangular, margins serrated.

Length $\frac{8}{20}$ths of an inch.

Hab. Cape of Good Hope (*M. Raynaud*).

The label on the bottle in which the animal has been preserved is not distinct, except that it was taken by "M. Raynaud, Cap^e de la Chevrette, Cap Fabrè, Janvier 1829;" but as the label attached to *Amphipronoë cuspidata* corresponds with this, I assume that the animals were found about the same time, since they were taken at nearly the same place.

3. RHABDOSOMA.

Rhabdosoma, *White, Sir E. Belcher's Voyage of the Samarang*, p. 63.
Macrocephalus, *Spence Bate, Ann. Nat. Hist.* 3rd ser. i. p. 362.

Animal long and slender. Cephalon produced anteriorly into a long rostrum, narrowed behind the eyes. Pleon having the three anterior segments normal; the fourth and fifth fused into one, long, cylindrical, narrow; sixth long, cylindrical, narrow. Superior antennæ in front of the eyes, short; inferior antennæ folded beneath the cephalon. Gnathopoda short, complexly chelate. Pereiopoda not having the basa dilated. Three posterior pairs of pleopoda biramous. Telson cylindrical, long.

This genus is incorporated with *Oxycephalus* by M.-Edwards.

1. Rhabdosoma armatum. (Plate LIV. fig. 6.)

Rhabdosoma armatum, *White, Sir E. Belcher's Voyage of the Samarang*, p. 63.
Oxycephalus armatus, *Edwards, Hist. des Crust.* iii. p. 101.
Macrocephalus longirostris, *Spence Bate, Ann. Nat. Hist.* 3rd ser. i. p. 362.

Female.—Cephalon as long as the animal; rostrum five times as long as the rest of the cephalon. Second and third segments of the pleon postero-dorsally produced into a point; fourth and fifth segments fused together; sixth segment nearly as long again as the preceding. Superior antennæ terminating in a long-oval flat joint; inferior antennæ obsolete. First pair of gnathopoda having the carpus infero-anteriorly produced beyond the extremity of the propodos, and furnished with a single long tooth upon the inferior margin; propodos two-thirds as broad as long, and having the inferior angle anteriorly produced; dactylos short, sharp, and capable of antagonizing at the apex with the produced extremities of the propodos and carpus. Second pair of gnathopoda resembling the first, but much longer and larger, having the inferior angle of the carpus produced considerably longer than the propodos; dactylos long, capable of antagonizing at the apex against that of the produced carpus, and near its centre with the propodos. First two pairs of pereiopoda subequal, the second a little the longer; third pair longer than the preceding; fourth pair one-third shorter than the third; fifth obsolete. Antepenultimate pair of pleopoda reaching as far as the ultimate, upper margin of peduncle serrated: penultimate pair of pleopoda originating from the posterior extremity of the same segment as the preceding, and not longer than the sixth segment of the pleon: ultimate pair of pleopoda about two-thirds the length of the antepenultimate;

rami long, lanceolate. Telson cylindrical (broken), reaching probably quite to the extremity of the ultimate pair of pleopoda.

Length 4½ inches.

Hab. Taken during a calm, floating on the surface of the South Atlantic (*Vice-Admiral Sir Edward Belcher*). Found by MM. Quoy and Gaimard in the sea between Amboyna and Van Diemen's Land (*Edwards*).

The specimen figured is a female, carrying many ova. It was presented by Vice-Admiral Sir E. Belcher to the Hunterian Museum of the College of Surgeons, to the Council of which I am indebted for its loan.

M. Guérin-Méneville was so kind as to show me the drawing of a specimen in his collection, which appeared to be of this species, from which he had procured some young animals. Without having had the opportunity of examining the specimen, I may remark, that the young approximate in form to that of *Oxycephalus*, showing that the long rostrum is developed with the growth of the animal.

2. **Rhabdosoma Whitei.** (Plate LIV. fig. 7.)

Male.—Cephalon about two-thirds the length of the animal; rostrum from the superior antennæ as long again as the rest of the cephalon. Sixth segment of the pleon not longer than the preceding. Superior antennæ curved downwards; the inferior convex margin thickly covered with hairs. Inferior antennæ cylindrical, slender, probably reaching, when extended, as far as the extremity of the rostrum; first joint reaching as far as the eyes; second as long as the first; third as long as the second (rest wanting); each joint is bent back against the preceding, and the whole, when at rest, are enclosed within an elongated groove on the under margin of the cephalon. Mandibles having the appendage long; first joint nearly as long as the first joint of the antennæ, second and third short. First pair of gnathopoda having the coxa anteriorly produced to an obtuse point; carpus broadly infero-anteriorly produced as far as the inferior angle of the propodos; propodos short, stout, inferior angle anteriorly produced; dactylos long, arcuate, capable of antagonizing at the apex with the extremity of the carpus only. Second pair of gnathopoda much longer than the first; carpus infero-anteriorly produced beyond the extremity of the propodos, the process being slender and curved, terminating in a fine point; propodos increasing towards the distal extremity, inferior angle slightly anteriorly produced; dactylos arcuate, antagonizing at the extremity with the apex of the carpus. Perciopoda gradually increasing in length posteriorly, the fourth pair being

the longest; fifth obsolete. Antepenultimate pair of pleopoda reaching to half the length of the ultimate; peduncle having the outer margin coarsely, the inner finely serrated: penultimate pair originating on the inner side of the preceding, and longer than the sixth segment of the pleon; peduncle having the outer margin coarsely, the inner finely serrated: ultimate pair nearly as long again as the sixth segment of the pleon; peduncle having both margins coarsely serrated; rami short, sharp, lanceolate, serrated. Telson cylindrical, reaching beyond the extremity of the ultimate pair of pleopoda, terminating obliquely in a fine point.

Female.—Differs from the above description in the absence of the inferior pair of antennæ.

Length $1\frac{3}{4}$ inch.

Hab. Not recorded.

Two specimens of this species were in the collection entrusted to me from the Museum of the Jardin des Plantes. The figure and description are from the more perfect.

Group ABERRANTIA.

The coxæ of the perciopoda are not squamiformly developed, some, or all, being fused to their respective segments. The pleon has one or more of the segments absent. This group comprises the Order Læmodipoda, as described by Edwards, and includes the family Dulichidæ of Dana. It contains two families.

Fam. 1. DULICHIDÆ.

Dyopedidæ, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Pereion consisting of six segments. Pleon consisting of five segments, exclusively of the telson. Fourth and fifth pairs of perciopoda attached to the sixth segment of the pereion. Ultimate pair of pleopoda wanting.

1. DULICHIA.

Dulichia, *Kröyer, Nat. Tidskr.* n. s. i. p. 521; *Voy. en Scand.* pl. 23. f. 1; *Spence Bate, Ann. Nat. Hist.* xx. p. 526, 1857.
Dyopedos, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Superior antennæ longer than the inferior. Inferior antennæ situated behind the superior. Gnathopoda subchelate; second pair larger than the first. Three posterior pairs of perciopoda subequal, longer than the first two, having their basa not broadly developed. First three pairs of pleopoda normally developed, two succeeding terminating in sharp styliform rami. Telson single, squamiform.

1. **Dulichia spinosissima.** (Plate LIV. fig. 8.) B.M.

Dulichia spinosissima, *Kröyer, Voy. en Scand.* pl. 23. f. 1.

Female.—Cephalon produced superiorly into a long rostrum. Last segment of the pereion and the first two of the pleon dorsally furnished with two teeth; third posteriorly produced into one long tooth; last three segments slender. Eyes round, elevated upon tubercles. Superior antennæ as long as the animal; flagellum not longer than the last joint of the peduncle. Inferior antennæ about half the length of the superior; flagellum not longer than the last joint of the peduncle. First pair of gnathopoda having the inferior angle of the propodos rounded; dactylos as long again as the palm. Second pair of gnathopoda having the propodos ovate; palm oblique, imperfectly defined. Coxæ of the perciopoda developed into an inferiorly-directed tooth. Posterior pair of pleopoda terminating in sharp styliform rami. Telson lanceolate.

Male.—According to Kröyer's figure, which I take to be the male of this species, the second pair of gnathopoda have the palm parallel

with the upper margin of the propodos, and defined by a large anteriorly-directed tooth.

Length $1\frac{1}{4}$ inch.

Hab. Riscoe, Arctic Seas.

The figure and description are taken from a specimen recently purchased by the British Museum.

2. **Dulichia porrecta.** (Plate LIV. fig. 9.) B.M.

Dyopedos porrectus, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Dulichia porrecta, *Spence Bate, Ann. Nat. Hist.* xx. p. 526, 1857.

Cephalon not produced into a rostrum. Pereion and pleon dorsally smooth. Eyes round, not elevated upon a tubercle. Superior antennæ about half the length of the animal; flagellum shorter than the last joint of the peduncle. Inferior antennæ two-thirds the length of the superior; flagellum much shorter than the last joint of the peduncle. First pair of gnathopoda having the propodos ovate; palm oblique, not defined. Second pair of gnathopoda having the propodos long; antero-inferior margin (palm) armed with two long teeth, the posterior being the longer, and directed straight forwards; dactylos waved on the internal margin. Coxæ of the pereiopoda not produced to a point. Ultimate pair of pleopoda having the rami styliform. Telson lanceolate.

Length $\frac{4}{20}$ths of an inch.

Hab. Banff (*Mr. Gregor*).

3. **Dulichia falcata.** (Plate LIV. fig. 10.) B.M.

Dyopedos falcatus, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.

Dulichia falcata, *Spence Bate, Ann. Nat. Hist.* xx. p. 526, 1857.

Cephalon not produced into a rostrum. Pleon and pereion smooth. Eyes round. Superior antennæ two-thirds the length of the animal; flagellum nearly as long as the last joint of the peduncle. Inferior antennæ (wanting). First pair of gnathopoda having the propodos tapering anteriorly; palm very oblique, not defined. Second pair of gnathopoda having the inferior angle of the palm, near the infero-posterior extremity of the propodos, defined by a crooked tooth, and furnished with one, slightly curved and anteriorly directed, at the anterior extremity; dactylos long, sharp and curved, and but slightly waved on the inner margin. The rest of the animal differs but little from that of the preceding species.

Length $\frac{4}{20}$ths of an inch.

Hab. Macduff (*Mr. Gregor*).

Fam. 2. CAPRELLIDÆ.

Pleon rudimentary. Oral appendages normally developed. Coxæ fused with the pereion. Branchial sacs attached to the first two or three segments of the pereion.

1. PROTO.

Proto, *Leach, Linn. Trans.* xi. p. 362, 1814.
Desmarest, Consid. sur les Crust. p. 276.
Leptomera, *Latreille.*
Desmarest, Consid. sur les Crust. p. 275.
Guérin, Iconogr. Crust. pl. 28. f. 3.
Kröyer, Nat. Tidskr. p. 496, 1842–43.
Edwards, Hist. des Crust. iii. p. 109.
Naupridia, *Latreille, Règne Anim. de Cuvier,* 2e édit. iv. p. 128; *Cours d'Entom.* p. 393 (*Edwards*).

Body cylindrical. Cephalon confluent with the first segment of the pereion. Pleon rudimentary. Mandibles having an appendage. Gnathopoda subchelate, having branchiæ attached to the second pair. Pereiopoda all developed; branchiæ on the two anterior pairs: two posterior pairs subequal; dactyla capable of being impinged against the anterior margin of the propoda. Two anterior pairs of pleopoda rudimentary, biarticulate, in the male styliform; rest obsolete.

1. Proto pedata. (Plate LV. fig. 1.) B.M.

Squilla pedata, *Müller, Zool. Dan.* iii. pl. 101. f. 1, 2.
Cancer (Gammarus) pedata, *Montagu, Linn. Trans.* xi. p. 6. pl. 2. f. 6.
Proto pedata, *Leach, Linn. Trans.* xi. p. 362.
Proton pedata, *Desmarest, Consid. sur les Crust.* p. 276.
Leptomera pedata, *Guérin, Iconogr. Crust.* pl. 28.
Edwards, Hist. des Crust. iii. p. 109.
Desmarest, Consid. sur les Crust. p. 278. pl. 46. f. 3.

Animal smooth, linear. Superior antennæ about half the length of the animal; flagellum as long as the last two joints of the peduncle. Inferior antennæ half the length of the superior; flagellum about half the length of the peduncle. First pair of gnathopoda having the propodos triangular, broadest near the carpal joint, tapering to the extremity; palm armed with fine denticles or spines, and defined by a prominent sharp process that carries two strong spines. Second pair of gnathopoda having the propodos four times as large as that of the first, long-ovate; palm waved, armed with a few denticles tipped with spines, and defined by a process tipped with a strong spine. First pair of pereiopoda slender, having the propodos posteriorly armed with four radiating spines; second pair like the first; third pair reversed, rudimentary;

fourth pair scarcely larger than the first, having the anterior margin excavate, and armed with two spines that correspond with the closed extremity of the dactylos; fifth pair like the fourth. First two pairs of pleopoda rudimentary.

Length $\frac{6}{20}$ths of an inch.

Hab. Devonshire (*Montagu, C. S. B.*); Moray Frith (*Rev. G. Gordon, Mr. Gregor*); Denmark (*Edwards*); Shetland (*Rev. A. M. Norman*).

2. Proto Goodsirii. (Plate LV. fig. 2.) B.M.

Proto Goodsirii, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857. *White, Hist. Brit. Crust.* p. 218.

Superior antennæ one-third the length of the animal. Inferior antennæ one-half the length of the superior. First pair of gnathopoda having the propodos broad at the base and tapering; palm very oblique, minutely dentate, defined near the base by an obtuse tooth. Second pair of gnathopoda having the propodos large, rounded above, palm hollowed, and filled with a semimembranous tissue; margins concave, armed anteriorly and posteriorly with two small teeth; dactylos much curved, impinging against the palm by the extremity only. First pair of pereiopoda longer than the second, and second longer than the third, short; fourth and fifth pairs subequally long.

Length $\frac{12}{20}$ths of an inch.

Hab. Moray Frith (*Rev. G. Gordon*); Shetland (*Rev. A. M. Norman*).

3. Proto elongata. (Plate LV. fig. 3.)

Proto elongatus, *Dana, U. S. Explor. Exped.* p. 809. pl. 54. f. 1.

"Body slender, without spines or tubercles. Cephalon rounded in front, about twice as long as the next segment. Second, third, fourth, fifth and sixth segments of the pereion subequal, oblong. Superior antennæ longer than half the body; flagellum hardly as long as the peduncle, having eight to ten articuli; articuli oblong; setæ few, shorter than the articuli. Inferior antennæ about as long as the fourth joint of the peduncle. Propodos of the first pair of gnathopoda triangular, lower angle near the base prolonged into an acute tooth: propodos of the second pair elongate; palm nearly straight, having an acute tooth near the base, and, in males, a tooth towards the apex. Branchiæ long, and nearly linear. Third and fourth pairs of feet longer than the fifth pair.

"Length two-thirds of an inch.

"*Hab.* Rio Janeiro, in ten to twelve fathoms water; taken, from the anchor, along with various Caprellids, January 1839."—*Dana.*

2. PROTELLA.

Protella, *Dana, U. S. Explor. Exped.* p. 812.

Body cylindrical. Cephalon confluent with the first segment of the percion. Pleon rudimentary. Mandibles having an appendage. Gnathopoda subchelate. First two pairs of pereiopoda rudimentary, having branchiæ attached; three posterior pairs subequally robust and long. Anterior pair of pleopoda rudimentary in the male; rest obsolete.

1. Protella Phasma. (Plate LV. fig. 4.) B.M.

Caprella phasma, *Lamarck, Syst. des Anim. sans Vert.* p. 165.
Cancer phasma, *Montagu, Linn. Trans.* vii. p. 66. f. 3.
Caprella Phasma, *Latreille, Ency. Méth.* pl. 336. f. 37 (after *Mont.*).
Desmarest, Consid. sur les Crust. p. 278.
Edwards, Hist. des Crust. iii. p. 108.
White, Cat. Crust. B.M. 1847; *Cat. Brit. Crust. B.M.* 1850; *Hist. Brit. Crust.* p. 216.
Rathke, Nov. Act. xx. p. 95.
Gosse, Marine Zool. p. 223.
Caprella acuminifera, *Johnston, Mag. Nat. Hist.* vi.
Ægina longispina, *Kröyer, Nat. Tidskr.* 2nd ser. i. p. 476, 1844–46.
Protella longispina, *Spence Bate, Synopsis, &c., Ann. Nat. Hist.* Feb. 1857.
Caprella spinosa, *Goodsir, Edin. New Phil. Journ.* xxxiii.

Male.—Cephalon rounded in front, dorsally armed with a prominent tooth. First segment of the percion furnished near the postero-dorsal margin with a strong tooth; second segment furnished with two strong teeth latero-dorsally placed near the centre, and another dorsally situated near the posterior margin; third and fourth segments furnished with rudiments of teeth similarly situated. Superior antennæ more than half the length of the animal: inferior about half the length of the superior. First pair of gnathopoda short; propodos triangular, palm defined by a sharp process: second pair long, having the propodos long-ovate, palm having a deep excavation near the anterior extremity, and defined by a prominent blunt tooth surmounted by one or more spines; dactylos articulating with the propodos subapically. Three posterior pairs of pereiopoda having the propodos arcuate, anterior margin armed with small tubercles surmounted by a spine, and a strong process surmounted by several short, distally-directed spines, corresponding with the extremity of the closed dactylos.

Female differs from the male only in possessing the ovigerous plates.

Length $\frac{11}{20}$ths of an inch.

Hab. Devonshire (*Montagu, C. S. B.*); Moray Frith (*Mr. Gregor*); Frith of Forth (*Mr. Goodsir, Dr. Johnston*); Cullercoats, Yorkshire (*Rev. A. M. Norman*). Norway (*Rathke*); Christiania (*Kröyer*).

2. Protella gracilis. (Plate LV. fig. 5.)

Protella gracilis, *Dana, U. S. Explor. Exped.* p. 812. pl. 54. f. 2.

"*Male.*—Body slender, without spines or tubercles, front obtuse. First segment of the pereion a little longer than the cephalon; second, third, fourth and fifth segments subequal, rather oblong. Superior antennæ very slender, longer than the body; peduncle but little shorter than the body; second and third joints of the peduncle subequal; flagellum more than once and a half the length of the preceding joint. Propodos of the first pair of gnathopoda very small, carpus not shorter: propodos of the second pair four times as long as that of the first pair, rather narrow; palm nearly naked, armed with three teeth, one external, one internal, and one subapical, truncate and oblique. Rudimentary feet slender and styliform, a little shorter than the segments. Branchiæ narrow, subelliptic.

"*Female.*—Propodos of the second pair of gnathopoda hardly broader than in the male; palm arcuate, spinulose, short, three-toothed, one exterior, acute, and two acute, very short subapical teeth.

"Length $\frac{7}{8}$ths of an inch.

"*Hab.* From thirty-one fathoms water, in Balabac Passage, attached to a Plumularia and a Gorgonia."—*Dana.*

3. CERCOPS.

Cercops, *Kröyer, Nat. Tidskr.* iv. p. 496, 1843.

Body cylindrical. Cephalon confluent with the first segment of the pereion. Pleon rudimentary. Gnathopoda subchelate; branchiæ attached to the second pair. First two pairs of pereiopoda obsolete; branchiæ attached to the corresponding segments. Fifth and sixth pairs of pleopoda developed, biarticulate, biramose, styliform in the male; rest obsolete.

1. Cercops Holbölli. (Plate LV. fig. 6.)

Cercops Holbölli, *Kröyer, Nat. Tidskr.* iv. p. 496, 1843.

Cephalon surmounted by a strong anteriorly-directed tooth, and a small one on each side, anterior to the eyes. Pleon consisting of five or six cylindrical segments. Antennæ short; inferior shorter than the superior. Second pair of gnathopoda larger than the first; propodos ovate, slightly tapering anteriorly; palm convex, armed with a small tooth, and defined by a sharp process. Pleopoda on the antepenultimate and penultimate segments biramose; rami styliform.

Hab. Arctic Sea? (*Holböll*).

4. CAPRELLA.

Caprella, *Lamarck, Syst. des Anim. sans Vert.* p. 165.
Leach, Linn. Trans. ii. p. 363.
Edwards, Hist. des Crust. iii. p. 105.
Kröyer, Nat. Tidskr. iv. p. 496, 1842–43.
Ægina, *Kröyer, Nat. Tidskr.* iv. 1843.
Podalirius, *Kröyer, Nat. Tidskr.* v. 1844.

Body cylindrical. Cephalon and first segment of the pereion confluent. Pleon rudimentary. Gnathopoda subchelate. First two pairs of pereiopoda represented by the branchiæ attached to their respective segments only; three posterior pairs of pereiopoda subequal. First and second pairs of pleopoda rudimentary in the male; the rest obsolete.

I have taken upon myself the responsibility of uniting Kröyer's genera *Ægina* and *Podalirius* with *Caprella*. To this conclusion I have not arrived hastily; but after examining a great number of *Caprellidæ*, I found that the development of the obscure abnormal pleon was very uncertain; that the anterior pair of pleopoda were constantly present in the males of every species, and are probably the analogue as well as the homologue of the intromittent organ in the podophthalmatous Crustacea.

1. Caprella linearis. (Plate LV. fig. 7.) B.M.

Caprella linearis, *Linn.* ?
Edwards, Hist. des Crust. iii. p. 106.
Risso, Crust. de Nice, p. 130.
Goodsir, Edinb. New Phil. Journ. xxxiii. p. 190.
(Not of *Leach* nor *Desmarest.*)
Caprella atomos, *Pennant* ?
Caprella punctata, *Risso, Crust. de Nice,* p. 130; *Eur. Mérid.* p. 127.

Body without tubercle or spine. First segment of the pereion short; four following subequal, as long again as the first. Superior antennæ nearly half the length of the animal; inferior reaching beyond the extremity of the peduncle of the superior. First pair of gnathopoda having the propodos tapering; palm extending the entire length of the inferior margin, straight, fringed with cilia; dactylos minutely serrated upon the inner margin. Second pair of gnathopoda larger than the first, having the propodos ovate, tapering; palm slightly uneven, convex, defined by a small tooth crowned by a stout spine. Three posterior pairs of pereiopoda having the propoda with the anterior margin excavate; the part against which the extremity of the closed dactylos impinges armed with two stiff corrugated spines.

Length $\frac{3}{20}$ths of an inch.

Hab. Probably all the coasts of Northern Europe, but much confused with *C. lobata*.

2. Caprella lobata. (Plate LV. fig. 8.)

Squilla lobata, *Müller, O. Fabr. Faun. Grönl.* p. 248.
Caprella lobata, *Guérin, Iconogr. Crust.* pl. 28. f. 2.
Kröyer, Voy. en Scand. pl. 25. f. 3.
Stimpson, Nat. Hist. Invert. Grand Manan, p. 44.
Ægina longicornis, *Kröyer, Voy. en Scand.* pl. 26. f. 3.
Caprella lævis, *Goodsir, Edinb. New Phil. Journ.* xxxiii.
White, Hist. Brit. Crust. p. 215.
Caprella linearis, *Leach, Edinb. Encycl.* p. 404.

Body carrying a few minute tubercles, the most conspicuous being the one on the cephalon, and the most constant those upon the three posterior segments of the pereion. First segment of the pereion long; second scarcely longer than the first; the three succeeding rather shorter, subequal. Superior antennæ not half the length of the animal; inferior scarcely reaching beyond the extremity of the second joint of the peduncle of the superior. Second pair of gnathopoda articulating with the pereion posteriorly to the centre of the second segment; propodos long-ovate, palm defined by one and armed with two teeth, the anterior one being often less perfectly defined than the posterior. The remaining appendages resemble those of *C. linearis*.

Length $\frac{3}{4}$ of an inch.

Hab. Northern coasts of Europe. Cullercoats (*Rev. A. M. Norman*); Kame's Bay, Millport, N. B. (*Mr. Robertson*).

I have little doubt that all the *Caprellæ* which have the first and second segments of the perion long are males, whereas those which have them short are females, even should the ovigerous plates be wanting in the latter.

3. Caprella tabida. (Plate LVI. fig. 1.)

Caprella tabida, *Lucas, Algérie*, f. 6.

This animal corresponds very closely with *C. linearis*; it is a little more robust than the type, but scarcely more so than a specimen dredged by Mr. Barrett in the Atlantic, or than some which have been sent to me by Mr. Robertson from Kame's Bay, Millport. The palm of the propodos of the second pair of gnathopoda is not defined, slightly concave, and furnished with cilia.

Hab. Coast of Algeria (*M. Lucas*).

4. Caprella typica. (Plate LVI. fig. 2.)

Podalirius typicus, *Kröyer, Voy. en Scand.* pl. 25. f. 1.

Like *C. linearis*, but more robust, particularly the female. Palm of the second pair of gnathopoda defined, in the male, by a strong recurved tooth, in the female by a small obtuse tooth.

Hab. Arctic Sea (*Kröyer*).

5. Caprella septentrionalis. (Plate LVI. fig. 3.)

Caprella septentrionalis, *Kröyer, Voy. en Scand.* pl. 25. f. 2.

Body robust. Small tubercle on cephalon. A tubercular ridge near the middle of the second and third segments of the pereion; posterior segments smooth. Superior antennæ about one-third the length of the animal. Inferior antennæ nearly as long as the superior. Second pair of gnathopoda articulating near the centre of the second segment of the pereion. Three posterior pairs of pereiopoda short.

Length $\frac{3}{20}$ths of an inch.

Hab. Arctic Sea, N. lat. 72° 45′, W. long. 56° 50′, in 15 fathoms (*Messrs. Warham and Harrison*).

6. Caprella scaura. (Plate LVI. fig. 4.)

Caprella scaura, *Templeton, Trans. Ent. Soc.* i. p. 191. pl. 15. f. 6.
Edwards, Hist. des Crust. iii. p. 107.

"Cephalon having an occipital tooth. First segment of the pereion cylindrical, but swollen out at the extremities; second longer, tumid posteriorly, giving attachment at the thickest part to the second pair of gnathopoda; third and fourth segments shorter and thicker than the anterior. Eyes irregularly arched. Superior antennæ twice as long as the inferior; first joint of the peduncle thick, contracting a little towards its apex; second elongate, obpyriform; third very slender and waved; flagellum equally long, with minute spines arising from teeth or elevations on the inferior surface, one half fused, the other subarticulated. Inferior antennæ with the first two joints of the peduncle minute; third elongate, similar in form to the second of the superior antennæ; fourth about the same length, waved; flagellum with a double series of hairs arising from the inferior edge, and increasing in length as they approach the apex, shorter than the preceding joint, tapering, spiny, and articulate. First pair of gnathopoda small, ovate, tapering. Second pair of gnathopoda long, slender, having the basos very long and waved; ischium, meros, and carpus minute; propodos long-ovate, palm oblique, hairy, with two tooth-like processes; dactylos much curved. Pereiopoda successively longer, monodactyle, and hairy; two small spines arise from near the base of the ultimate joint of each pair. Colour pale brown.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Mauritius."—*Templeton.*

7. **Caprella cornuta.** (Plate LVI. fig. 5.)

Caprella cornuta, *Dana, U. S. Explor. Exped.* p. 816. pl. 54. f. 5.

"Body slender. Segments oblong; second, third, fourth and fifth of the pereion subequal in length. Cephalon hardly higher than long, a little shorter than the next segment, armed near the middle of the dorsal surface with an acute spine, obliquely erect. Second segment of the pereion not three times as long as broad. Superior antennæ rather longer than half the body, moderately stout; flagellum with from ten to fourteen articuli, one-fourth shorter than the peduncle. Inferior antennæ very little longer or slightly shorter than the peduncle of the superior. Branchiæ narrow-elliptic. Propodos of the first pair of gnathopoda small: propodos of the second pair oblong; palm nearly straight, having an acute tooth near the base, and another anterior to the middle.

"Length about $\frac{1}{2}$ an inch.

"*Hab.* From among sea-weed near the Fort, not far from Praya Grande, Rio Janeiro, December 1838. Both males and females were abundant."—*Dana.*

8. **Caprella acutifrons.** (Plate LVI. fig. 6.) B.M.

Caprella acutifrons, *Latreille, in Desmarest, Consid. sur les Crust.* p. 277.
Edwards, Hist. des Crust. iii. p. 108.
White, Hist. Brit. Crust. p. 216.
Caprella Pennantii, *Leach, Edinb. Encycl.* vii. p. 404.
Spence Bate, Synopsis, &c., Ann. Nat. Hist. Feb. 1857.

Female.—Cephalon anteriorly and superiorly surmounted by a tooth directed forwards. First segment of the pereion very short, the four following subequal. Superior antennæ not half the length of the animal; inferior longer than the peduncle of the superior. Second pair of gnathopoda articulating near the anterior extremity of the second segment of the pereion; propodos ovate, tapering; palm deeply waved, defined by an obtuse angle armed with a large tooth or spine, central lobe crowned by small tubercles. Three posterior pairs of pereiopoda short, robust; anterior margin of the propoda excavate.

Length $\frac{7}{20}$ths of an inch.

Hab. Devonshire coast (*Leach*; *C. S. B.*).

The animal is generally covered with numerous small points or hairs.

The female differs from the male in having the second pair of gnathopoda articulating quite at the anterior extremity of the second segment of the pereion, and in having the palm of the propodos almost straight, and defined by a small tooth.

9. Caprella nodosa. (Plate LVI. fig. 7.)

Caprella nodosa, *Templeton, Trans. Ent. Soc.* i. p. 192. pl. 11. f. 7.
Edwards, Hist. des Crust. iii. p. 108.

"Cephalon short, furnished with a dorsal spine anteriorly directed. First segment of the pereion short; second longer than the cephalon and the first segment of the pereion together; third and fourth segments rather elongate. Superior antennæ longest; first and second joints of peduncle robust, elongate; third shorter, somewhat obconic; flagellum tapering, multiarticulate, joints subequal, and furnished with a few short, often articulated, blunt spines towards their distal extremities. Inferior antennæ one-third shorter. Gnathopoda similar: second pair much larger than the first; basos short; propodos ovate, palm oblique, waved, hairy, inferior angle marked by a strong tooth. Perciopoda terminating in a strong curved dactylos. Colour pale brown, with a darker longitudinal line marking the position of the intestinal canal.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Mauritius. It is found in considerable numbers among the marine plants."—*Templeton.*

The male and female appear not to differ except in the latter carrying the ovigerous pouch.

10. Caprella geometrica. (Plate LVI. fig. 8.) B.M.

Caprella geometrica, *Say, Proc. Philad. Acad.* i. pt. 2. p. 390.

Cephalon furnished with an anteriorly-directed dorsal tooth. First segment of the pereion short, second long, third and following gradually decreasing. Superior antennæ not half the length of the animal; flagellum having the infero-distal extremity of each articulus produced and armed with cilia. Inferior antennæ longer than the peduncle of the superior. Second pair of gnathopoda having the propodos ovate, with the palm armed with a short tooth and an anterior lobe. In other respects this species closely approximates to *C. acutifrons* of the British coast.

Length $\frac{1}{20}$ths of an inch.

Hab. Common in the bays of the U.S. (*Say*).

The description and figure are taken from a specimen presented to the British Museum by Professor Say.

11. Caprella dilatata. (Plate LVI. fig. 9.)

Caprella dilatata, *Dana, U. S. Explor. Exped.* p. 813. pl. 54. f. 3.

"Body slightly granulose under a high magnifier; stout. Segments but little oblong, or not at all so. Cephalon twice as long as the

next segment, armed in front with a horizontal spine. Third segment of the pereion somewhat quadrate, anterior angles prominent; fourth triangular. Superior antennæ a little shorter than half the body, very stout at the base, the first two joints being about four times as thick as the following joint; last joint of the peduncle slender; flagellum consisting of about twelve articuli, a little shorter than the peduncle, articuli slightly oblong, narrow at base. Inferior antennæ slender, ciliate below, sparingly longer than the base of the superior pair. Propodos of the first pair of gnathopoda with a small acute prominence on the palm near the base of the joint, palm hairy; length of the propodos half that of the second pair. Propodos of the second pair of gnathopoda broad and oblong, narrowing from the middle towards the apex, with the lower posterior angle rounded; palm nearly straight and densely hirsute, without a tooth or spine where the closed dactylos reaches; it has a slender acute tooth near the middle, and an oblique, truncate, subquadrate one just anterior. Branchial appendages nearly round. First joint of the last three pairs of pereiopoda with the upper apex prolonged and acute; second joint very small; carpus stout, and having a prominence with two short spines below near the base. Colour of specimens found on sea-weed nearly brick-red.

"Length $\frac{1}{2}$ to $\frac{2}{3}$rds of an inch.

"*Hab.* Rio Janeiro; brought up on the anchor, January 1839: also on sea-weed along the sea-shore beyond Praya Grande, December 21, 1838."—*Dana.*

12. **Caprella robusta.** (Plate LVI. fig. 10.)

Caprella robusta, *Dana, U. S. Explor. Exped.* p. 814. pl. 54. f. 4.

"Near the *C. dilatata* in the horizontal beak, short cephalon, branchiæ, and other characters, but somewhat narrower. Superior antennæ more slender at base, a little longer than half the body; flagellum a little shorter than the peduncle. Inferior antennæ longer than the peduncle of the superior, ciliate below. Branchiæ round-elliptic. Propodos of the second pair of gnathopoda broad; palm sparsely hirsute, bearing an acute tooth near the base, and usually another small acute tooth above the middle.

"Length about $\frac{1}{2}$ an inch.

"*Hab.* Rio Janeiro: from among sea-weed near the Fort, not far from Praya Grande, abundant; also brought up with the anchor in the harbour."—*Dana.*

Judging by the figures as well as the description, this species appears to be but sexually distinct from *C. dilatata.*

13. **Caprella acuminifera.** (Plate LVI. fig. 11.) B.M.

Caprella acuminifera, *Leach.*
Latr. in Desmarest, Consid. sur les Crust. p. 277.
Edwards, Hist. des Crust. iii. p. 107. pl. 33. f. 21.
Caprella Hystrix, *Kröyer, Voy. en Scand.* pl. 24. f. 1.

Tuberculated along the dorsal surface, increasing in degree posteriorly. First segment of the pereion short. Superior antennæ scarcely half the length of the animal: inferior not longer than the peduncle of the superior. Second pair of gnathopoda articulating anteriorly to the centre of the second segment of the pereion; propodos ovate; palm convex, defined by a process surmounted by a spine with an emargination immediately in front, and armed with two rudimentary teeth anterior to the centre of the palm. Three posterior pairs of pereiopoda robust, subequal; propoda having the anterior margin excavate.

Length $\frac{1}{4}$ of an inch.

Hab. Devon (*C. S. B.*); Northumberland (*Rev. A. M. Norman*); Millport, N. B. (*Mr. Robertson*).

14. **Caprella calva,** n. s. (Plate LVII. fig. 1.) B.M.

Male.—Cephalon posteriorly and dorsally lobed. First segment of the pereion very short; second, third and fourth long, and each surmounted by three large dorsal tubercles or teeth, the two anterior being sublateral and parallel, the third posterior and central; fifth, sixth and seventh segments shorter, and surmounted by only two sublateral parallel tubercles. Superior antennæ not half the length of the animal: inferior not longer than the peduncle of the superior. Second pair of gnathopoda articulating posteriorly to the middle of the second segment; propodos extremely arcuate on the anterior margin; palm deeply excavate, defined by a strong tooth, and armed anteriorly to the excavation by a short tooth; dactylos arcuate, interior margin armed with two obtuse teeth. Three posterior pairs of pereiopoda subequal; propoda not anteriorly excavate, but armed with a few spines.

Female.—Tubercles on the dorsal surface not so conspicuous. Second pair of gnathopoda with the propodos ovate; palm convex, defined by a small process armed with two spines.

Length: male $\frac{8}{20}$ths, female $\frac{7}{20}$ths of an inch.

Hab. Banff (*Mr. Edward*); Northumberland (*Rev. A. M. Norman*); Millport, N. B. (*Mr. Robertson*); Plymouth (*Mr. Barlee & C. S. B.*).

Varieties of this species occur, in which the propodos of the second pair of gnathopoda differs in form between that of the female and

that of the male as here described; and so gradually can these differences be traced, that there cannot be a doubt that they are those of degree only. The species may invariably be distinguished from all others by the vaulted character of the skull-like cephalon, and by the peculiarity of the dorsal tubercles (particularly those most posteriorly situated) being surmounted by numerous small bead-like tubercles.

15. Caprella acanthifera. (Plate LVII. fig. 2.) B.M.

Caprella acanthifera, *Leach, Edinb. Encycl.* vii. p. 404 (not *Johnston*).
Caprella tuberculata, *Guérin, Icon. Crust.* pl. 28. f. 1.
Goodsir, Edinb. New Phil. Journ. xxxiii.

Male.—Cephalon not lobed, surmounted by a small tubercle. First two segments of the pereion long; five posterior tuberculated, the tubercles increasing in size posteriorly. Second pair of gnathopoda articulating at the posterior extremity of the second segment; propodos long, pubescent; palm rather more than half the length of the propodos, concave, defined by a stout process surmounted by a sharp tooth; dactylos armed with an obtuse protuberance near the middle of the inner margin. Three posterior pairs of pereiopoda short.

Female.—Cephalon surmounted by a stout tooth. First segment of the pereion short; second much longer, tuberculated; five remaining segments tuberculated, the tubercles increasing in size posteriorly. Second pair of gnathopoda articulating near the anterior extremity of the second segment; propodos ovate; palm straight, defined by a small tooth.

Length: male $\frac{1}{2}$ an inch, female $\frac{1}{4}$ of an inch.

Hab. Guernsey (*Rev. A. M. Norman*); Millport, N. B. (*Mr. Robertson*).

The form of the propodos of the second pair of gnathopoda appears occasionally to vary from that of the specimen described.

16. Caprella sanguinea.

Caprella sanguinea, *Gould, Invert. Mass.* p. 336.
Stimpson, Marine Invert. Grand Manan, p. 44.

"A very common species in the higher levels of the Laminarian zone. It may be distinguished from the others by its slender antennæ and proportionately large hands. Colour bright crimson.

"Length $\frac{3}{4}$ of an inch.

"*Hab.* Grand Manan."—*Stimpson.*

17. Caprella longimanus.

Caprella longimanus, *Stimpson, Marine Invert. Grand Manan,* p. 44.

"Body with a few spines along the back of each segment. Superior

antennæ rather stout, and twice as long as the inferior, which are very slender. Propoda very long and rather broad, with two or three teeth along the inner edge; the gnathopoda to which they belong are placed on the thickened posterior part of the second segment. Colour light yellowish brown. Eyes red.

"Length $\frac{3}{4}$ of an inch.

"*Hab.* Grand Manan."—*Stimpson.*

18. Caprella Stimpsoni.

Caprella robusta, *Stimpson, Marine Invert. Grand Manan*, p. 44 (not *Dana*).

"This is a very large, thick and robust species, of an olivaceous or often of a light-brown colour. There are numerous short spines on the back, very variable in size and number in different specimens. The antennæ are not large, the upper being about half the length of the body, and the lower nearly as long and very hairy. Gnathopoda placed at about the middle of the second segment, with the propodos having strong teeth on the lower edge and a thick dactylos.

"Length 1·25 inch.

"*Hab.* Dredged on a rocky bottom in 12 fathoms, back of Duck Island Ledge, Grand Manan."—*Stimpson.*

19. Caprella spinosissima. (Plate LVII. fig. 3.)

Ægina spinosissima, *Stimpson, Marine Invert. Grand Manan*, p. 45.
Caprella spinifera, *Bell, Sir E. Belcher's Last of the Arctic Voyages*, p. 407. pl. 35. f. 2.

"Body slender, much thickened at the origins of the appendages, covered everywhere on the back and sides with sharp broad-based spines, some of which are very long: these sometimes show a tendency to arrangement in rows. There is one very strong spine just above each branchial vesicle. The cephalon is large, with prominent eyes. The inferior antennæ are very much more slender than the superior, and the mouth parts well-developed; the triarticulate appendage of the mandibles being small, but obvious. The second pair of gnathopoda are placed at the thickening near the anterior extremity of the second segment, and have two spines [teeth?] on the basos; also two teeth on the propodos, one at its extremity, the other on the inner edge, just reached by the curved dactylos when closed. The posterior perciopoda are highly developed, with their subcheliform organs provided with a spine in the middle. Pleon very short, with a pair of posterior appendages which nearly equal it in length. The ground-colour is either purplish or brownish,

upon which are numerous spots and patches of sulphur-white irregularly distributed.

"Length 1 inch.

"*Hab.* Dredged in great numbers, adhering to *Gemellaria dumosa*, in 10 fathoms, off Cheneys Head, Grand Manan."—*Stimpson. Belcher.*

The description of this species is taken from Stimpson's work quoted; the figure is from a drawing by Professor Westwood in the 'Last of the Arctic Voyages.'

20. **Caprella longicollis.** (Plate LVII. fig. 4.)

Caprella longicollis, *Lucas, Algérie*, f. 4.

First segment of the pereion long; second as long as the first. Superior antennæ half the length of the animal: inferior one-third the length of the superior. First pair of gnathopoda short: second very long, having the basos long, the propodos long-ovate, palm about half the length of the propodos, concave, dactylos slightly arcuate. Length $\frac{3}{4}$ of an inch.

Hab. Algeria.

21. **Caprella æquilibra.** (Plate LVII. fig. 5.) B.M.

Caprella equilibra, *Say, Journ. Acad. Philad.* i.
Caprella Januarii, *Kröyer, Voy. en Scand.* pl. 6. f. 15.
Dana, U. S. Explor. Exped. p. 819. pl. 55. f. 2.

First segment of the pereion very long; second longer than the first, furnished posteriorly with a straight tooth in the ventral medial line; three succeeding segments subequal; last two very short. Eyes small and round. Superior antennæ not half the length of the animal; first joint longer than the cephalon; second more than twice the length of the first; third about half the length of the second, and not tapering at the extremity; flagellum about half the length of the third joint of the peduncle, and suddenly narrower. Inferior antennæ not half the length of the superior. First pair of gnathopoda very small, and situated close to the cephalon: second pair attached to the posterior extremity of the second segment of the pereion, and near the centre of the animal; basos not longer than the pereion is deep; propodos more than half the length of the second segment of the pereion, long-ovate; palm two-thirds the length of the inferior margin and subparallel with the superior margin, defined by an acute tooth, and armed anteriorly with a large triangular tooth or process, and a small denticle (not constant: *Say*) immediately posterior to the process. Three posterior pairs of pereiopoda short.

Length $\frac{3}{4}$ of an inch ($1\frac{1}{4}$ inch, *Dana*).

Hab. South Carolina, U.S. (*Say*); Northern Seas (*Kröyer*); Hong-

kong (*Mr. Harrington*); Rio Janeiro, from the anchor, in 10–12 fathoms (*Dana*); Plymouth Sound (*C. S. B.*); Seaham (*Rev. A. Norman*).

On a careful comparison of Say's type, presented by him to the British Museum, with the specimens brought from Hongkong by Mr. Harrington, and with that taken by myself from a buoy in Plymouth Sound, I have not been able to detect the slightest variation; and judging from Kröyer's figure of *C. Januarii*, the association appears to be as near. Dana describes his specimen as having the palm of the second pair of gnathopoda pubescent; but in all other respects his description corresponds with that of the Northern forms.

If, as some naturalists suppose, it is impossible that animals from such distant localities can belong to one species, the coincidence of form is curious, since the one description and figure will serve for all four.

22. Caprella globiceps.

Caprella globiceps, *Dana, U. S. Explor. Exped.* p. 820. pl. 55. f. 3.

"Body rather slender; second, third, fourth and fifth segments of the pereion subequal, somewhat oblong. Cephalon rounded, twice as long as the next segment. Superior antennæ pubescent, rather longer than half the body, and more than twice as long as the inferior; first joint a little shorter than the second; flagellum with from ten to twelve articuli, hardly shorter than the peduncle. Inferior antennæ quite short (much shorter than the peduncle of the superior), ciliate. Branchiæ oblong. Propodos of the second pair of gnathopoda oblong; palm pubescent, nearly straight prominence towards the base.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Rio Janeiro, in 10 to 12 fathoms; taken from the anchor with the preceding."—*Dana.*

23. Caprella tenella. (Plate LVII. fig. 6.)

Ægina? tenella, *Dana, U. S. Explor. Exped.* p. 822. pl. 55. f. 4.

"Body very slender. Cephalon subacute in front, but not produced into a beak, longer than the next segment. Second segment of the pereion shorter than either of the three following, armed with spines on the middle and posterior margin of the back; third aculeate at the posterior margin only; remaining segments unarmed. Superior antennæ slender, much longer than half the body; first joint half as long as the second; flagellum articulated, a little shorter than the peduncle: inferior antennæ hardly longer than the peduncle of the superior. Propodos of second pair of gnathopoda narrow oblong, with a broad, obliquely truncate apex;

palm not arcuate, near the middle obliquely excavate, and having a few minute tufts of pubescence. Branchiæ quite small, oblong.

"Length $\frac{1}{2}$ an inch.

"*Hab.* Coral reef, Sooloo Sea. From the shores of a small island off the harbour of Soung, in the large island of Xolo."—*Dana.*

24. **Caprella attenuata.** (Plate LVII. fig. 7.)

Caprella attenuata, *Dana, U. S. Explor. Exped.* p. 817. pl. 55. f. 1.

"Body very slender; segments elongate. Second segment of pereion nearly twice as long as the third, and very slender. Cephalon hardly one-fourth as long as the next segment, bearing an acute spine on the middle of the dorsal surface. Superior antennæ longer than half the body; first joint about half as long as the second; flagellum with from eight to ten articuli, about half as long as the peduncle, first articulus very long and composite. Inferior antennæ about as long as the first two joints of the peduncle of the superior. Branchiæ nearly linear. Propodos of the second pair of gnathopoda very narrow (about one-sixth as broad as long), having an acute tooth just posterior to the middle of the lower margin, and another anterior to the middle.

"Length $\frac{2}{3}$rds of an inch.

"*Hab.* Rio Janeiro; abundant."—*Dana.*

25. **Caprella aculeata.** (Plate LVII. fig. 8.)

Ægina? aculeata, *Dana, U. S. Explor. Exped.* p. 823. pl. 55. f. 5.

"Near *C. tenella*; slightly stouter. Cephalon hardly acute in front. Second and third segments of the pereion armed with two curved spines on the back, the others unarmed. Propodos of the second pair of gnathopoda broad-elliptical, arcuate below, obsoletely erose and remotely pubescent. Branchiæ quite small, oblong.

"Length nearly $\frac{1}{2}$ an inch.

"*Hab.* Rio Janeiro, with the preceding."—*Dana.*

26. **Caprella ultima,** n. s. (Plate LVII. fig. 9.)

Male.—Cephalon surmounted by a blunt tooth. First two segments of the pereion subequal; together, about one-third the length of the animal. Eyes small, round. Superior antennæ not half the length of the animal. Inferior antennæ reaching beyond the extremity of the second joint of the superior antennæ. First pair of gnathopoda small, articulating one-third from the posterior extremity of the second segment of the pereion; propodos long and narrow. Second pair of gnathopoda large; propodos long; palm

slightly pubescent, somewhat concave, defined by a stout tooth. Pereiopoda small, slender.

Female.—Having the first two segments of the pereion short. Second pair of gnathopoda articulating towards the anterior extremity of the second segment of the pereion; the propodos smaller than in the male; palm not concave, and defined by a small tooth. Length 1 inch.

Hab. Not recorded.

In the collection entrusted to me from the Jardin des Plantes.

27. Caprella solitaria.

Caprella solitaria, *Stimpson, Proc. Acad. Nat. Sc. Philad.* July 1855.

"Smooth, slender, bright crimson. Superior antennæ with large peduncles; inferior ones slender, subpediform. Cephalon with a strong tooth (spine), pointed forwards, between the minute eyes. Gnathopoda large, with two spines within, the largest next the dactylos. Branchial leaflets of the third and fourth segments very small. Pereiopoda with the dactyla curved.

"Length 0·6 inch; breadth 0·05 inch.

"A single specimen (the only *Caprella* taken at the Cape) occurred on a gravelly bottom in Simon's Bay."—*Stimpson.*

28. Caprella luctator.

Caprella luctator, *Stimpson, Proc. Acad. Nat. Sc. Philad.* June 1855.

"Smooth, rather slender. First joint of the superior antennæ thickened, one-third as long as the second, which equals the third; flagellum 16-articulate. Gnathopoda of the second pair large, tridentate below, teeth unequal. Pereiopoda robust, with large unidentate propoda.

"Length 1 inch.

"*Hab.* Janegasima."—*Stimpson.*

29. Caprella gracilis.

Caprella gracilis, *Stimpson, Proc. Acad. Nat. Sc. Philad.* June 1855.

"Slender, smooth, with a slender curved rostrum. Second joint of the superior antennæ as long as the first and third together. Posterior pereiopoda very slender, the seventh pair twice as long as the fifth.

"Length $\frac{3}{4}$ inch.

"*Hab.* Japan."—*Stimpson.*

Fam. 3. CYAMIDÆ.

Cephalon cylindrical, tapering. Pereion broad and flat. Pleon rudimentary. Eyes posterior to the superior antennæ. Oral appendages small. Coxæ fused with the pereion. Branchiæ on the third and fourth segments of the pereion only.

The animals of this family are parasitic.

1. CYAMUS.

Cyamus, *Lamarck, Syst. des Anim. sans Vert.* p. 166.
Larunda, *Leach, Linn. Trans.* ii. p. 363.
Panope, *Leach, Edinb. Encycl.* vii. p. 404.

Cephalon long, tapering, cylindrical, and fused with the first segment of the pereion, which is broad and flat. Pleon rudimentary. Eyes small, situated behind the superior antennæ. Superior antennæ having a peduncle consisting of three joints and a flagellum. Inferior antennæ rudimentary. Oral appendages small, situated at the extremity of the cephalon. Gnathopoda subchelate.

1. Cyamus gracilis. (Plate LVIII. fig. 1.)

Cyamus gracilis, *Roussel, Ann. Sc. Nat.* i. (2 sér.) pl. 8. f. 24.
Edwards, Hist. des Crust. iii. p. 113.

Pereion narrow, having the third and fourth segments not broader than the second. Second pair of gnathopoda larger than the first, having the palm slightly concave, not defined. Branchiæ cylindrical, single-branched, not longer than the pereion is broad.

Length $\frac{1}{2}$ an inch.

Hab. "Infests the heads of whales." (*Edwards, l. c.*) Cape of Good Hope (*Paris Collection*); and also taken during the voyage of the Chevrotte.

2. Cyamus Delphini.

Cyamus Delphini, *Guérin-Méneville, Iconogr. Crust.* pl. 28. f. 5.

I have not seen this species; but, judging from Professor Milne-Edwards's description, it appears to be only a variety of *C. gracilis*.

3. Cyamus Ceti. (Plate LVIII. fig. 2.)

Cyamus Ceti, *Linnæus.*
Edwards, Hist. des Crust. iii. p. 113.

Cephalon long. Second segment of the pereion as long as the cephalon, the others shorter and not broader. Eyes approximate. Su-

perior antennæ scarcely longer than the cephalon. First pair of gnathopoda small, with the palm concave, slightly defined; second pair with the propodos large, having the palm concave and furnished with a tooth near the distal extremity. Branchiæ more than half the length of the animal, single-branched. Pereiopoda short and robust.

Length $\frac{1}{2}$ an inch.

Hab. Talcahuna (*Paris Collection*).

This specimen formed one of the collection entrusted to me for description in this Catalogue.

4. Cyamus ovalis. (Plate LVIII. fig. 3.)

Cyamus ovalis, *Roussel, Ann. Sc. Nat.* i. (2 sér.) pl. 8. f. 24.
Edwards, Hist. des Crust. iii. p. 113.

Cephalon and first segment of the pereion not so long as the second segment, conical; second segment longer than the third; third and fourth slightly wider than the second; fifth, sixth and seventh gradually narrowing. Superior antennæ half as long again as the cephalon. First pair of gnathopoda having the propodos with the palm concave and defined by an angle: second pair with the palm furnished with two obtuse teeth; dactylos curved. Branchiæ consisting of one long and three shorter branches to each organ. Three posterior pairs of pereiopoda short and strong.

Length $\frac{1}{2}$ an inch.

Hab. Cape of Good Hope. British coast (*White*).

The figure and description are taken from a specimen from the Cape of Good Hope that was entrusted to me from the Jardin des Plantes.

5. Cyamus abbreviatus. (Plate LVIII. fig. 4.) B.M.

Cyamus abbreviatus, *Say, Journ. Acad. Nat. Sci. Philad.* i. p. 393.

Cephalon and first joint of the pereion scarcely longer than the second joint of the pereion; the rest of the joints of the pereion not broader than the first. Eyes distant from each other. Superior antennæ not longer than the cephalon. First pair of gnathopoda having the propodos long, with the palm not defined, and the dactylos as long as the propodos: second pair having the propodos with the palm defined by a small tooth, and armed centrally with a large obtuse one; dactylos short and curved. Branchiæ single-branched, short, being about as long as half the diameter of the

segments of the pereion. Three posterior pairs of pereiopoda short and robust.

Length $\frac{2}{20}$ths of an inch.

Hab. Coasts of the United States (*Say*).

The figure and description are taken from specimens presented by the founder of the species to the British Museum. They appear to me to be only the young of *C. ovalis*.

6. Cyamus erraticus.

Cyamus erraticus, *Roussel, Ann. Sc. Nat.* i. (2 sér.) pl. 8. f. 24.
Edwards, Hist. des Crust. iii. p. 113.

This species appears to differ from *C. ovalis* in having but one large obtuse tooth, placed near the middle of the palm of the second pair of gnathopoda, and in the branchiæ consisting of one long and one very short branch to each organ.

Length $\frac{1}{2}$ an inch.

Hab. Beneath the fins of *Balænæ*.

7. Cyamus Thomsoni. (Plate LVIII. fig. 5.)

Cyamus Thomsoni, *Gosse, Marine Zool.* i. p. 131. f. 225; *Ann. Nat. Hist.* xvi.

Cephalon triangular. Third and fourth segments of the pereion not so wide as the second. Antennæ shorter than the cephalon. First pair of gnathopoda as large as the second, and similarly formed. Second pair of gnathopoda not larger than the pereiopoda. Branchiæ short, single-branched.

Length $\frac{4}{20}$ths of an inch.

Hab. On the Dolphin, British Seas (*Gosse*).

APPENDIX.

Page 26. **Orchestia trigonocheirus.**

Hab. Malta.

Page 27. **Orchestia Beaucoudraii.**

Talitrus Beaucoudraii, *Edwards, Ann. des Sc. Nat.* xx. p. 364; *Hist. des Crust.* iii. p. 14.

Judging from the author's description, this species is the female of an *Orchestia*, and, from being found at Chausay in La Manche, probably of *O. littorea*.

Page 32. **Orchestia Ochotensis.** (Plate I. *a*. fig. 9.)

Orchestia Ochotensis, *Brandt, Sibirische Reise*, pl. 6. f. 18.

This species appears to differ but little from Dana's figure of *O. Pickeringii*. I have only seen it in the work just quoted, from which the figure is copied into this Catalogue.

Hab. Shores of Siberia.

Orchestia Nidrosiensis.

Orchestia Nidrosiensis, *Kröyer, Grönl. Amfip.*

Fr. Müller, in Wiegmann's Archiv, p. 53, 1848, says that this species, by the character of the antennæ and maxillipeds, is a *Gammarus*.

Page 58. Add two other species:—

6 *a*. **Montagua Phyllonyx.**

Leucothoë phyllonyx, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr.* p. 28.

"This species may be recognized by the subequal antennæ, the su-

perior being a little the longer, not attaining half the length of the animal. The second pair of gnathopoda are subcheliform, similar to the first, but larger. Dactyla of the first, second, and third pairs of pereiopoda compressed, foliaceous, elongate-elliptic, but in the last pair styliform; third and fourth pairs of pereiopoda shorter than the preceding, and not attaining half the length of the fifth (scarcely reaching half the length of the body)."—*Sars.*

This closely resembles *M. glacialis.*

7 *a.* **Montagua Norvegica.**

Leucothoë Norvegica, *Liljeborg, Ofvers. af Kongl. Vet. Akad.* 1850, p. 335*.
Bruzelius, Skand. Amph. Gamm. p. 97.

"Body compressed. First pair of coxæ small; fourth largest. Second pair of gnathopoda having the propodos large, oblong, with the posterior process considerably produced. Posterior pair of pleopoda terminating in a single ramus.

"*Hab.* Western coast from Finmark to Bohusia."—*Bruzelius.*

The author has evidently, in this and the preceding species, adopted Kröyer's genus, instead of *Leucothoë* of Leach. It appears to me that most probably this species is but a synonym of *M. clypeata.*

Page 81. **Anonyx gulosus.**

Anonyx gulosus, *Kröyer, Nat. Tidskr., anden Række,* i. p. 611; *Voy. en Scand.* p. 14. f. 2.
Bruzelius, Skand. Amph. Gamm. p. 44.

Bruzelius affirms *A. Norvegicus* of Liljeborg to be a synonym of this species.

Page 83. Add another species:—

3. **Pontoporeia furcigera.** B.M.

Pontoporeia furcigera, *Bruzelius, Skand. Amph. Gamm.* p. 49. f. 8.

"Superior antennæ furnished with a triarticulate secondary appendage. Fourth segment of the pleon furnished with a process (perpendicular to the animal) that is forked at the apex. Telson cleft nearly to the base.

"Length $\frac{1}{4}$ of an inch.

"*Hab.* Very rare, in the Gulf of Gullmarsfjorden, Bohusia."—*Bruzelius.* North Atlantic (*Barrett*); length $\frac{1}{2}$ an inch.

* Not having seen Liljeborg's memoir, I quote this synonym from Bruzelius.

Page 86. Add another species:—

3. Callisoma Kröyeri.

Anonyx Kröyeri, *Bruzelius, Skand. Amph. Gamm.* p. 45. f. 7.

"Superior antennæ shorter than the inferior. Eyes oval. First pair of gnathopoda feeble; propodos narrow-rectangular; dactylos minute, nearly covered with thick hairs. Second pair of gnathopoda having the propodos small, nearly ovate; dactylos thick. Posterior pair of pleopoda having the rami elongate-lanceolate. Telson deeply cleft, apex unevenly rounded.

"Length $\frac{1}{4}$ of an inch.

"*Hab.* From Finmark to Bohusia."—*Bruzelius.*

Page 92. Add another species:—

1 *a*. Ampelisca carinata.

Ampelisca carinata, *Bruzelius, Skand. Amph. Gamm.* p. 87. f. 16.

"Cephalon slightly rostrate. Superior antennæ not curved downwards, and having the first and second joints of the peduncle pectinate-hispid on the latero-inferior margin, the first shorter than the second. Inferior antennæ much longer than the superior, very slender, and longer than the animal. Fifth and sixth segments of the pleon fused together, and having two small tubercles on the lateral dorsal surface. Dactyla of the first and second pairs of pereiopoda nearly as long as the carpi and propoda conjointly. Fifth pair of pereiopoda having the posterior margin of the meros nearly straight, and the dactylos laminar. Posterior angle of the third segment of the pleon not acute. Telson deeply cleft.

"Length $\frac{6}{20}$ths of an inch.

"*Hab.* In deep harbours, at Dröbak, Norway, and at Gullmarsfjorden, Bohusia."—*Bruzelius.*

Page 97. Add another genus:—

17. HAPLOOPS.

This genus differs from *Ampelisca* in having the cephalon less produced anteriorly and the organs of vision reduced to two.

1. Haploops tubicola.

Haploops tubicola, *Liljeborg, Öfvers. af Kongl. Vet. Akad.* 1855.
Bruzelius, Skand. Amph. Gamm. p. 88.
Ampelisca Eschrichti?, *Liljeborg, l. c.* 1852, p. 6.

"Front without a rostrum. Back smooth and round. Fourth segment of the pleon furnished with obsolete tubercles. Antennæ

subequal; inferior furnished with long hairs. Gnathopoda subequal, hispid, second pair rather the smaller; propoda ovate, terminating in small dactyla. Posterior pair of pleopoda with the rami of equal length, the exterior furnished with plumose cilia, the interior sharp and plumose only at the extremity. Telson rounded. Colour violet about the body, red about the egs.

"*Hab.* Coast of Norway."—*Condensed from Liljeborg.*

2. Haploops carinata.

Haploops carinata, *Liljeborg, Ofvers. af Kongl. Vet. Akad.* 1855. *Bruzelius, Skand. Amph. Gamm.* p. 89.
Ampelisca Eschrichti?, mas, *Liljeborg, l. c.* 1852.

"Antennæ very long and slender; inferior the longer, surpassing the body in length, and in both sexes having the peduncle robust. Gnathopoda having the propoda narrower than in the preceding species. Dorsum carinated posteriorly. Fourth segment of the pleon furnished with a large median tubercle, the fifth and sixth with smaller lateral ones. Posterior pair of pleopoda having the rami subulate, subequal, and plumose. Pereiopoda and telson of the same form as in the preceding species. Colour as in *H. tubicola*.

"Rare. One specimen was taken with the preceding; but it is not known whether, like it, it dwells in tubes or not."—*Liljeborg.*

Page 104. Add three other species:—

3. Œdicerus lynceus.

Œdiceros lynceus, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr.* p. 25.

"This species is known by the thick but not inflated pereion, by a small but distinct carina in the middle of the dorsum of the first four segments of the pleon, and by the superior antennæ being half the length of the inferior, reaching to the fifth segment of the pereion. Eyes contiguous, yet in distinct longitudinal furrows, crookedly oval, brownish where they meet above the head. First and second pairs of pereiopoda very short, and more slender than the gnathopoda. The fourth pair of pereiopoda are long, but the fifth is the longest (equalling half the length of the animal). All the terminal pleopoda (the posterior excepted, which can scarcely be called styliform) are long, compressed, slightly curved, lanceolate and sharp."—*Sars.*

4. Œdicerus Fossor.

Œdiceros Fossor, *Stimpson, Proc. Acad. Nat. Sc. Philad.* 1855.

"Body rounded above. Pleon with the third and fourth segments compressed and raised above into a sharp crest. Eyes black, round, and small. Antennæ subequal, with stout flagella forming half their length; each flagellum consisting of about eighteen articuli, and having a serrated appearance from the produced spine-like inferior angle of each articulus. Mandibles palpigerous. Maxillipeds much elongated and curving downwards. Gnathopoda subequal; propoda rather broadly ovate; dactyla about one-half as long as propoda. First and second pairs of pereiopoda having the propoda subovate or paddle-shaped, with the rounded extremity covered with hairs; dactyla obsolete: third and fourth pairs very short, with compressed, clavate, or cutlas-shaped dactyla. Coxæ of the third pair of pereiopoda very large, square. Three posterior pairs of pleopoda biramose, very hairy on their inner edges. Colour white, with a few blackish spots.

"Length 0·2 inch. Found in the littoral zone; concealing themselves in the sand as they are washed out from it by successive waves.

"*Hab.* Australia, at Botany Bay."—*Stimpson.*

5. Œdicerus obtusus.

Œdiceros obtusus, *Bruzelius, Skand. Amph. Gamm.* p. 92. f. 17.

"Anterior margin of the cephalon straight, not produced into a rostrum. Gnathopoda subequal, having the carpi produced inferiorly into a long process; propoda ovate. First and second pairs of pereiopoda having the dactyla dilated, laminar. Telson short, broad, subsinuated at the posterior extremity.

"*Hab.* Deep water in Gullmarsfjorden."—*Bruzelius.*

Page 104. Add another genus:—

20 *a*. NICIPPE.

Nicippe, *Bruzelius, Skand. Amph. Gamm.* p. 99.

"Body robust. Coxæ moderately large. Antennæ slender; superior carrying a secondary appendage. Mandibles dissimilar, carrying an appendage of three joints, having an accessory process on one of the rami and not upon the other. Palpus of the first pair of maxillæ biarticulate. Maxillipeds with small plates, and the palp composed of four joints. Gnathopoda subcheliform.

Three posterior pairs of pereiopoda gradually increasing in length. Pleopoda biramose; rami uniarticulate."—*Bruzelius.*

1. Nicippe tumida.

Nicippe tumida, *Bruzelius, Skand. Amph. Gamm.* p. 99. f. 19.

"Superior antennæ longer than the inferior. Dorsum rounded; fourth segment of the pleon with the posterior margin armed with two dorsal teeth. Gnathopoda subequal; propoda oblong-ovate. Posterior pair of pleopoda having the rami equal.

"*Hab.* Rare, at Dröbak, Christian Gulf."—*Bruzelius.*

Since the above has been in type, I have been so fortunate as to find, among the Crustacea dredged last summer (1861) in the Shetlands by Mr. Jeffreys, a single specimen of this species.

Page 105. **Monoculodes affinis (Stimpsoni).**

Œdiceros affinis, *Bruzelius, Skand. Amph. Gamm.* p. 93. f. 18.

This species of Bruzelius so closely corresponds with *M. Stimpsoni* of this Catalogue, that I think the name of the latter must be sunk for that given to it by Bruzelius, as having priority of date.

Page 125. Add another species:—

4. Iphimedia Stimpsoni.

Iphimedia obesa, *Stimpson, Proc. Acad. Nat. Sc. Philad.* July 1855.

"Robust, thick. Superior antennæ longest, in length two-thirds of that of the body, and with thick basal joints. Eyes very large, subreniform, black. Gnathopoda subcheliform, of moderate size. Three posterior pairs of pleopoda slender, smooth; ultimate pair biramose. Telson one elongated scale. Colour crimson, with flake-white blotches.

"Length 0·25 inch.

"*Hab.* Australia, at Port Jackson. Found in circumlittoral zone, on weedy and sandy bottoms."—*Stimpson.*

Page 126. Add a new genus:—

35 *a*. PEREIONOTUS.

Pereionotus, *Spence Bate & Westwood, Hist. Brit. Sessile-eyed Crust.* p. 227.

Resembles *Phlias*, except that the posterior pair of pleopoda terminate in a single ramus.

1. Pereionotus Testudo. B.M.

Pereionotus Testudo, *Spence Bate & Westwood, Hist. Brit. Sessile-eyed Crust.* p. 228.

Oniscus testudo, *Montagu, Linn. Trans.* ix. p. 102. pl. 5. f. 5. *Leach, Edin. Encyc.* vii. p. 405 (not *Gosse & White*).

All the segments of the pereion and the first of the pleon elevated into a strong dorsal carina; each segment of the pereion flat at the top; first of the pleon produced posteriorly and terminating in a rounded point; three posterior segments of the pleon small and feeble, inflexed against the inferior surface of the pereion. Superior antennæ short and robust, inferior small and feeble. Four anterior pairs of appendages belonging to the pereion having the coxæ as deep as the segments to which they are respectively attached, and projecting outwardly inferiorly. Gnathopoda subequal; propoda not dilated, long and narrow; palm short; dactylos reaching beyond the inferior margin of the palm. Perciopoda short and stout. Antepenultimate pair of pleopoda having the peduncle rudimentary and the rami very long and foliaceous; penultimate having the peduncle long and the rami long and styliform; ultimate short, terminating in a very short single ramus. Length $\frac{2}{20}$ths of an inch.

Hab. South Devon (*Montagu*).

I was not aware of the preservation of this species in the collection of the British Museum until after the completion of this Catalogue. The specimen is a dried one, hence it has been mistaken by Mr. Gosse for Owen's genus *Acanthonotus*, and I unfortunately followed him. As soon as I became acquainted with its preservation, the officers of the British Museum, with their usual liberality, gave me permission to have this unique specimen at home for close examination. This, therefore, has enabled the author and Professor Westwood, in their 'History of the British Sessile-eyed Crustacea,' to give a carefully drawn figure and details, to which I would refer the student.

In consequence of this discovery, *Acanthonotus Testudo* must lose its specific name. In the 'British Sessile-eyed Crustacea' it is named *A. Owenii*.

Page 128. Add another species:—

4. Acanthonotus parasiticus.

Amphithoë parasitica, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr.* p. 19.

"Resembles *A. serratus*, but may be known by a carina in the dorsal median line, commencing at the fifth segment of the pereion and

continuing to the fourth segment of the pleon, each segment being produced posteriorly into an acute triangular tooth. Eyes large, slightly oval, convex. Coxæ of the second and third pairs of pereiopoda unusually large, as long again as the preceding, that of the second produced inferiorly and anteriorly, of the third inferiorly and posteriorly into a sharp conical tooth (the coxa of the second pair of pereiopoda is curved, that of the third is straight). Gnathopoda subchelate, moderately large. Antennæ subequal; inferior rather the longer, slightly surpassing half the length of the animal."—*Sars.*

I think there can be no doubt that this species belongs to the genus *Acanthonotus*.

Page 132. **Dexamine Loughrini.**

I am induced, upon a reconsideration of this species, to consider it as being a variety of *Atylus Swammerdamii*.

Page 133. Add two other species:—

6. **Dexamine tridentata.**

Paramphithoë tridentata, *Bruzelius, Skand. Amph. Gamm.* p. 74. f. 13.

"Cephalon furnished with a very small rostrum. Dorsum of the pereion rounded, smooth; first and second segments of the pleon having the median posterior margin produced into an acute tooth. Superior antennæ much shorter than the long inferior. Gnathopoda having the propoda oblong-ovate and of moderate size. Telson single, posterior margin truncated and toothed.

"*Hab.* Shores of Finmark."—*Bruzelius.*

This species bears a close resemblance to *D. tricuspis* of Kröyer.

7. **Dexamine Vedlomensis.**

Dexamine Vedlomensis, *Spence Bate & Westwood, Hist. Brit. Sessile-eyed Crust.* i. p. 242.

Last segment of the pereion as well as first four of the pleon dorsally carinated and produced posteriorly into a large tooth. Inferior antennæ with the peduncle having the last two joints very long, subequal.

Length $\frac{1}{4}$ of an inch.

Hab. Vedlom Voe, Shetland (*Rev. A. M. Norman*, in whose collection the specimen is preserved).

Page 144. Add another species:—

3*a*. Pherusa elegans.

Paramphithoë elegans, *Bruzelius, Skand. Amph. Gamm.* p. 75. f. 14.

"Cephalon produced into a small rostrum. Eyes large, subovate. Dorsum rounded; first and second segments of the pleon with the median posterior margin forming a little acute tooth. Superior antennæ much shorter than the inferior, which are extremely long. Gnathopoda slender, subequal; propoda nearly oval. Telson simple, tapering to a rounded extremity.

"*Hab.* Amongst *Fuci* in the Gulf of Gullmarsfjorden, Bohusia."—*Bruzelius.*

Page 146. **PARAMPHITHOË.**

Having taken *P. Hystrix* as the type of the genus, I arranged the remaining species as synonyms of the following genera.

This was done previously to my having seen Bruzelius's Memoir. I feel supported in my opinion, however, by observing that Bruzelius found it necessary to arrange his species under nine divisions in the genus.

The following are the synonyms of the respective genera:—

Pleustes panoplus	Paramphithoë panopla.
Pherusa pulchella	—— pulchella.
—— bicuspis.....	—— bicuspis.
Atylus compressus.....	—— compressa.
Calliope læviuscula	—— læviuscula.
—— Norvegica	—— Norvegica.

Page 149. Add another species:—

2*a*. Calliope Fingalli.

Calliope Fingalli, *Spence Bate & Westwood Hist. Brit. Sessile-eyed Crust.* i. p. 263.

This species resembles *C. Ossiani*, except in having the last segment of the pereion and the first three of the pleon, with the posterior dorsal margins, elevated and produced into an obtuse tooth, each increasing in size posteriorly.

Length $\frac{1}{2}$ an inch.

Hab. Shetland (*J. G. Jeffreys*).

Page 158. Add two other species:—

6. Leucothoë stylifera.

Leucothoë stylifera, *Stimpson, Proc. Acad. Nat. Sc. Philad.* May 1855.

"Antennæ subequal, one fifth of the length of the body; flagella of the very slender inferior ones triarticulate. Eyes small, subreniform.

broadest above, dark red. Coxæ rather large, especially the fourth pair. Gnathopoda as in *L. furina, grandimanus*, &c.; basa with wide expansions, somewhat produced inferiorly. Posterior pairs of pleopoda nearly smooth, sharp, much elongated; last pair much exceeding the antepenultimate and with large peduncles. Colour pale orange.

"Length $\frac{1}{3}$rd of an inch.

"*Hab.* Japan."—*Stimpson.*

7. Leucothoë affinis.

Leucothoë affinis, *Stimpson, Proc. Acad. Nat. Sc. Philad.* 1855.

"Robust, thick anteriorly, much narrowed at the pleon, of a crimson colour mottled with white. Antennæ equal in length, slender, uniform in thickness as far as the short flagellum, where they abruptly diminish in size. Eyes large, ovate, broadest above, whitish, with black beneath. First pair of gnathopoda with the superior process of the carpus, as also the propodos, greatly elongated and slender. Second pair of gnathopoda very large; propodos ovate; carpus with a parallel curved process projecting along the under margin of the propodos. Pereiopoda very slender; posterior pair longest.

"Length 0·5 inch.

"*Hab.* Cape of Good Hope, at False Bay. Found on a gravelly bottom in the coralline zone."—*Stimpson.*

Page 163. MICRODEUTOPUS.

Unfortunately, not having in my possession a copy of Costa's Memoir, published in the 'Rend. della Reale Accad. delle Sci. di Napoli,' 1853, I have erroneously converted the name into *Microdentopus*. I am indebted to Professor Westwood for the correction.

Autonoë, *Bruzelius, Skand. Amph. Gamm.* p. 23.

This genus of Bruzelius corresponds with *Microdeutopus*, including also *Aora* and *Eurystheus*.

Autonoë punctata, Bruzelius, *l. c.* p. 24. t. 1. f. 3, appears to correspond with the yellow variety of *Aora gracilis* of this Catalogue (p. 161).

Page 164. Add another species:—

1 *a*. Microdeutopus grandimanus.

Autonoë grandimana, *Bruzelius, Skand. Amph. Gamm.* p. 26. t. 1. f. 4.

"Eyes round. Superior antennæ longer than the inferior. First pair of gnathopoda larger than the second. In the *male*, the first

pair have the carpus very large, subglobose, with the posterior and inferior angles greatly produced, compressed, the posterior produced into a tooth; propodos compressed, much smaller, with the posterior margin armed with two large teeth; dactylos terminating in a nail: the second pair have the basos considerably dilated, laminar; propodos rectangular. In the *female*, the first pair of gnathopoda have the propodos rectangular: the second pair have the basos narrow, not furnished with long hairs; the carpus larger than the meros; propodos rectangular. Posterior pair of pleopoda having the exterior ramus the longer, and equalling in length that of the peduncle.

"*Hab.* Rare, upon the western shores of Sweden from Bohusia to Fretum. Found by M. Liljeborg in the harbour of Landscrona."—*Bruzelius.*

The following are additional synonyms to species already described:—

Page 164. **Microdeutopus anomalus.**

Autonoë anomala, *Bruzelius, Skand. Amph. Gamm.* p. 25. f. 4.

Page 166. **Microdeutopus longipes.**

Autonoë longipes, *Bruzelius, Skand. Amph. Gamm.* p. 28.

Page 167. **Microdeutopus macronyx.**

Autonoë macronyx, *Bruzelius, Skand. Amph. Gamm.* p. 29. t. 1. f. 6.

Page 174. **Niphargus Stygius.**

Professor Westwood informs me that I have trusted too much to the figures in the 'Dublin Natural History Review,' and that if I had seen the original of Schiödte, I should not have united *Aquilex* and *Stygius* in one species. As I have not seen a specimen of *N. Stygius*, I yield the point, though, it must be confessed, with considerable hesitation.

Page 180. **Gammarella Normanni.**

Gammarella Normanni, *Spence Bate & Westwood, Brit. Sessile-eyed Crust.* p. 333.

Like *G. brevicaudata*, except that the superior antennæ are longer and the second pair of gnathopoda are more slender. It may be a female of *G. brevicaudata* or some other species.

It was taken by the Rev. A. M. Norman in about 10 fathoms, off Guernsey.

Page 196. **Eurystheus erythrophthalmus.**

Add to the synonymy:—

Autonoë erythrophthalmus, *Bruzelius, Skand. Amph. Gamm.* p. 27.

Page 200. **Pallasea cancelloides (Cancellus).**

Gammarus cancelloides, *Gerstfeldt, Mém. de l'Acad. de St. Pétersbourg*, viii. pp. 287, 288. t. 9. f. 8.
S. Lovén, Ofvers. af K. Vet. Akad. Forh. 1861, no. 6. p. 287.

This species agrees very closely with *P. Cancellus* of this Catalogue, differing only, as far as I can make out, in the greater development of the tubercles upon the first and second segments of the pleon.

Hab. In the freshwater lakes Vettern and Venern, Sweden (*Widigren, Olofson, & Cederström*); in Baikal and Angara, Siberia (*Gerstfeldt*).

I am indebted to my friend Professor Kinahan for an opportunity of examining this species, as well as *Pontoporeia affinis* and *Gammaracanthus loricatus*, from the freshwater lakes of Sweden. These, together with *Mysis relicta*, Liljeborg, and *Idothea Entomon*, Linn., have been dredged in the lakes Vettern and Venern by MM. Widigren, Olofson, and Cederström.

Page 205. Add another species:—

1 *a*. **Gammarus fissicornis.**

Gammarus fissicornis, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr.* p. 28.

"This species may be known by a strong reversed tooth (*spina*) in the middle of the posterior margin of the first and second segments of the pleon, wanting in the third, but terminating in the fourth and fifth with an acute longitudinal carina produced posteriorly into a strong, erect, triangular, acute tooth (*spina*), which is largest in the fourth segment. Antennæ very short: superior two-thirds longer than the inferior, slightly surpassing one-third of the length of the animal; secondary appendage of the superior antennæ unusually large, equalling half the length of the flagellum, and consisting of fourteen articuli. Gnathopoda having strong subcheliform propoda, largest in the second pair. Posterior pair of pereiopoda longest, being nearly two-thirds of the length of the animal."—*Sars.*

Page 205. **Gammarus Pulex.**

Professor Westwood, after extended research, has come to the conclusion that the original specific name of our British freshwater species was *Pulex*, and not *fluviatilis*. The specific names of these two species should, therefore, be exchanged.

Page 250. Add four other species:—

34 *a*. **Amphithoë latipes.**

Amphithoë latipes, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr.* p. 20.

"This species is known by a carina on the first two segments of the

pleon, produced posteriorly into obtuse broadly triangular teeth, present also on the seventh segment of the pereion, and terminating on the third segment of the pleon. The superior antennæ two-thirds the length of the body, the inferior ones half shorter. Gnathopoda subchelate; the second pair much larger than the first. The third, fourth, and fifth pairs of pereiopoda having the fourth and fifth joints very broad, being produced inferiorly and posteriorly."—*Sars*.

It appears to me that this description corresponds closely with that of *Calliope Fingalli* in the 'History of the British Sessile-eyed Crustacea,' in which case Sars's specific name would take precedence.

34 *b*. Amphithoë serraticornis.

Amphithoë serraticornis, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr*. p. 21.

"Animal smooth. Eyes moderately large, reniform. Antennæ subequal, about one-third of the length of the animal; third joint of the peduncle of the superior produced into a conico-acute tooth (*spina*) covered with hairs, equalling in length half the joint; articuli of the flagellum broadly dilated anteriorly and inferiorly, so that the flagellum appears to be serrated."—*Sars*.

This species appears to me to belong to the genus *Atylus* or *Calliope*.

34 *c*. Amphithoë fulvocincta.

Amphithoë fulvocincta, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr*. p. 22.

"Has a strong sharp tooth in the middle of the posterior margin of the last segment of the pereion and the first two segments of the pleon, but no carina. Eyes large, oval, or a little reniform. Antennæ unusually long and slender; the superior from three-fourths to four-fifths longer than the inferior, equalling or surpassing the length of the animal. In colour the animal is of a pellucid yellowish-white, marked with rings of brownish-yellow in the posterior dorsal margin of each segment; antennæ with brownish rings; eyes red."—*Sars*.

34 *d*. Amphithoë macrocephala.

Amphithoë macrocephala, *Sars, Oversigt den Norsk-Arctiske Region forekommende Krebsdyr*. p. 23.

"Allied to the preceding, and similarly armed. It is to be known by the great size of the head, which nearly equals that of the first

three segments of the pereion. Eyes very large, oval, black. Superior antennæ about half the length of the inferior, which reach nearly to the length of the animal."—*Sars.*

Page 349. **Proto pedata.**

Naupridia tristis, *Van Beneden, Faune litt. de Belgique.*

I can see nothing that induces me to change my opinion that this genus of Latreille is but a damaged species of *Proto*. I have seen many specimens, but could invariably identify them by other specific characters notwithstanding the absence of the two posterior pairs of pereiopoda. *Naupridia tristis* of Van Beneden appears to me to be undoubtedly a damaged specimen of *Proto pedata* of Leach.

LIST OF PLATES.

The same letters bear the same homological relation throughout the Plates, and are explained in pages 1, 2, and 3.

PLATE I.

Fig. 1. Talitrus Locusta.——Fig. 2. Orchestoidea (?) Novi Zealandiæ (*after Dana*). —— Fig. 3. Orchestoidea scabripes (*after Dana*).

PLATE I. *a*.

Fig. 1. Talitrus platycheles (*after Guérin-Méneville*).——Fig. 2. Orchestia Fuegensis.——Fig. 3. Orchestia Aucklandiæ.——Fig. 4. Allorchestes Ochotensis.——Fig. 5. Allorchestes Piedmontensis. ——Fig. 6. Talitrus brevicornis.——Fig. 7. Nicea Lucasii (*after Nicolet*).——Fig. 8. Orchestia Chilensis.——Fig. 9. Orchestia Ochotensis (*after Brandt*).

PLATE II.

Fig. 1. Orchestoidea Fischerii (*after Edwards*).——Fig. 2. Orchestoidea tuberculata (*after Nicolet*).——Fig. 3. Orchestoidea Pugettensis (*after Dana*).——Fig. 4. Orchestoidea Brasiliensis (*after Dana*).—— Fig. 5. Talorchestia gracilis (*after Dana*).——Fig. 6. Talorchestia (?) Africana.——Fig. 7. Talorchestia Quoyana.

PLATE III.

Fig. 1. Orchestia longicornis.——Fig. 2. Orchestia Gryllus.—— Fig. 3. Orchestia Platensis.——Fig. 4. Orchestia Traskiana.—— Fig. 5. Orchestia Novæ-Zealandiæ.——Fig. 6. Orchestia Telluris ♂. ——Fig. 7. Orchestia sylvicola.——Fig. 8. Orchestia megalophthalma.

PLATE IV.

Fig. 1. Orchestia Cloquetii (*after Audouin*).——Fig. 2. Orchestia Capensis.——Fig. 3. Orchestia Deshayesii.——Fig. 4. Orchestia Telluris ♀.——Fig. 5. Orchestia Mediterranea.——Fig. 6. Orchestia trigonocheirus.——Fig. 7. Orchestia scutigerula.——Fig. 8. Orchestia littorea.——Fig. 9. Orchestia spinipalma (*after Dana*).—— Fig. 10. Orchestia tenuis (*after Dana*).

PLATE V.

Fig. 1. Orchestia nitida (*after Dana*).——Fig. 2. Orchestia Chilensis (*after Dana*).——Fig. 3. Orchestia quadrimana (*after Dana*).——Fig. 4. Orchestia serrulata (*after Dana*).——Fig. 5. Orchestia dispar (*after Dana*).——Fig. 6. Orchestia Pickeringii (*after Dana*).——Fig. 7. Orchestia Hawaiensis (*after Dana*).——Fig. 8. Orchestia Tahitensis (*after Dana*).——Fig. 9. Orchestia Euchore (*after Fr. Müller*).——Fig. 10. Orchestia Gryphus (*after Fr. Müller*).

PLATE VI.

Fig. 1. Allorchestes Knickerbockeri.——Fig. 2. Allorchestes carinatus.——Fig. 3. Allorchestes Novæ-Zealandiæ.——Fig. 4. Allorchestes Nilssonii.——Fig. 5. Allorchestes Sayi.——Fig. 6. Allorchestes microphthalmus.——Fig. 7. Allorchestes Inca.——Fig. 8. Allorchestes imbricatus.——Fig. 9. Allorchestes Gaimardii.——Fig. 10. Allorchestes Pereiri.

PLATE VII.

Fig. 1. Allorchestes verticillatus (*after Dana*).——Fig. 2. Allorchestes hirtipalma (*after Dana*).——Fig. 3. Allorchestes gracilis (*after Dana*).——Fig. 4. Allorchestes brevicornis (*after Dana*).——Fig. 5. Allorchestes humilis (*after Dana*).——Fig. 6. Allorchestes australis (*after Dana*).——Fig. 7. Allorchestes orientalis (*after Dana*).——Fig. 8. Allorchestes gramineus (*after Dana*).——Fig. 9. Allorchestes medius (*after Dana*).——Fig. 10. Allorchestes Pugettensis (*after Dana*).

PLATE VIII.

Fig. 1. Allorchestes Hawaiensis (*after Dana*).——Fig. 2. Allorchestes littoralis.——Fig. 3. Nicea Lubbockiana.——Fig. 4. Montagua monoculoides.——Fig. 5. Montagua marina.——Fig. 6. Montagua Alderii.

PLATE IX.

Fig. 1. Montagua longimana.——Fig. 2. Montagua pollexiana.——Fig. 3. Montagua glacialis (*after Kröyer*).——Fig. 4. Montagua clypeata (*after Kröyer*).——Fig. 5. Montagua Guérinii (*from an unpublished drawing by Guérin-Méneville*).——Fig. 6. Stenothoë validus (*after Dana*).——Fig. 7. Stenothoë clypeatus.——Fig. 8. Pleustes tuberculatus.——Fig. 9. Pleustes panoplus.

PLATE X.

Fig. 1. Danaia dubia.——Fig. 2. Stegocephalus Ampulla.——Fig. 3. Lysianassa nugax.——Fig. 4. Lysianassa Kröyeri.——Fig. 5. Lysianassa Magellanica.——Fig. 6. Lysianassa nasuta.——Fig. 7. Lysianassa variegata.——Fig. 8. Lysianassa appendiculata.——Fig. 9. Lysianassa Vahlii.——Fig. 10. Lysianassa Atlantica.——Fig. 11. Lysianassa Costæ.

PLATE XI.

Fig. 1. Lysianassa Audouiniana.——Fig. 2. Lysianassa longicornis.——Fig. 3. Lysianassa (?) Brasiliensis (*after Dana*).——Fig. 4. Anonyx longicornis. —— Fig. 5. Anonyx Edwardsii.——Fig. 6. Anonyx tumidus (*after Kröyer; and at* Pl. XIII. fig. 7).

PLATE XII.

Fig. 1. Anonyx obesus.——Fig. 2. Anonyx denticulatus.——Fig. 3. Anonyx exiguus.——Fig. 4. Anonyx Holböllii.——Fig. 5. Anonyx nobilis.——Fig. 6. Anonyx minutus.——Fig. 7. Anonyx lagena (*and at* Pl. XIII. fig. 8).——Fig. 8. Anonyx ampulloides. ——Fig. 9. Anonyx nanus (*after Kröyer*).

PLATE XIII.

Fig. 1. Anonyx Plautus.——Fig. 2. Anonyx punctatus.——Fig. 3. Anonyx annulatus.——Fig. 4. Anonyx longipes.——Fig. 5. Anonyx ampulla.——Fig. 6. Anonyx Fuegiensis (*after Dana*).—— Fig. 7. Anonyx tumidus.——Fig. 8. Anonyx lagena.

PLATE XIV.

Fig. 1. Pontoporeia femorata (*after Kröyer*).——Fig. 2. Pontoporeia affinis (*after Lindström*). —— Fig. 3. Opis typica (*after Kröyer*). —— Fig. 4. Opis Eschrichtii (*after Kröyer*). —— Fig. 5. Callisoma crenata.——Fig. 6. Callisoma Hopei (*after Costa*).—— Fig. 7. Alibrotus littoralis (*after Kröyer*).——Fig. 8. Uristes gigas (*after Dana*).

PLATE XIV. *a*. (*Vide* PLATE XXI.)

Fig. 1. Hyale Pontica (*after Rathke*).——Fig. 2. Phlias serratus. ——Fig. 3. Phlias Rissoanus.——Fig. 4. Grayia Pugettensis (*after Dana*).——Fig. 5. Guerinia Nicæensis (*after Hope*).

PLATE XV.

Fig. 1. Ampelisca Gaimardii.——Fig. 2. Ampelisca ingens.—— Fig. 3. Ampelisca Belliana. —— Fig. 4. Ampelisca limicola. —— Fig. 5. Ampelisca Japonica.

PLATE XVI.

Fig. 1. Phoxus simplex.——Fig. 2. Phoxus Holböllii.——Fig. 3. Phoxus plumosus.——Fig. 4. Grayia imbricata.——Fig. 5. Westwoodilla cæcula.

PLATE XVII.

Fig. 1. Œdicerus Novæ-Zealandiæ (*after Dana*).——Fig. 2. Monoculodes carinatus.——Fig. 3. Monoculodes Stimpsoni.——Fig. 4. Kröyera arenaria.——Fig. 5. Westwoodilla hyalina.——Fig. 6 Amphilochus manudens.——Fig. 7. Darwinia compressa.

PLATE XVIII.

Sulcator arenarius.

PLATE XIX.

Fig. 1. Urothoë Bairdii.——Fig. 2. Urothoë marinus.

PLATE XX.

Fig. 1. Urothoë brevicornis.——Fig. 2. Urothoë elegans.——Fig. 3. Urothoë irrostratus (*after Dana*).——Fig. 4. Urothoë rostratus (*after Dana*).——Fig. 5. Liljeborgia pallida.

PLATE XXI.

Fig. 1. Phædra Kinahani.——Fig. 2. Phædra antiqua.——Fig. 3. Prosoponiscus problematicus (*Fossil*).

PLATE XXII.

Fig. 1. Isæa Montagui.——Fig. 2. Iphimedia obesa.——Fig. 3. Iphimedia Eblanæ.

PLATE XXIII.

Fig. 1. Iphimedia nodosa (*after Dana*).——Fig. 2. Otus carinatus.——Fig. 3. Acanthonotus Testudo.——Fig. 4. Acanthonotus serratus (*after Owen*).——Fig. 5. Brandtia latissima ♂.——Fig. 6. Brandtia latissima ♀.

PLATE XXIV.

Fig. 1. Dexamine spinosa.——Fig. 2. Dexamine Blossevilliana.——Fig. 3. Dexamine Loughrini.——Fig. 4. Dexamine tenuicornis (*after Rathke*).——Fig. 5. Dexamine tricuspis (*after Kröyer*).

PLATE XXV.

Fig. 1. Atylus carinatus.——Fig. 2. Atylus carinatus ~ *.——Fig. 3. Atylus carinatus ~.——Fig. 4. Atylus Huxleyanus.

PLATE XXVI.

Fig. 1. Atylus villosus.——Fig. 2. Atylus Swammerdamii.——Fig. 3. Atylus gibbosus.——Fig. 4. Atylus austrinus.——Fig. 5. Atylus inermis (*after Kröyer*).——Fig. 6. Atylus crenulatus (*after Kröyer*).

* The mark ~ is intended to symbolise a young animal.

PLATE XXVII.

Fig. 1. Atylus bispinosus.——Fig. 2. Atylus simplex (*after Dana*).——Fig. 3. Atylus fissicauda (*after Dana*).——Fig. 4. Atylus Capensis (*after Dana*).——Fig. 5. Pherusa pulchella (*after Kröyer*).——Fig. 6. Pherusa cirrus.——Fig. 7. Pherusa bicuspis.——Fig. 8. Pherusa costata (*after Edwards*).——Fig. 9.* Pherusa fucicola.——Fig. 10. Pherusa Barretti.

PLATE XXVIII.

Fig. 1. Paramphithoë Hystrix.——Fig. 2. Calliope læviuscula.——Fig. 3. Calliope Ossiani.——Fig. 4. Calliope grandoculis.——Fig. 5. Amphithonotus Edwardsii.——Fig. 6. Eusirus cuspidatus ♀.——Fig. 7. Eusirus cuspidatus ♂.

PLATE XXIX.

Fig. 1. Eusirus Helvetiæ.——Fig. 2. Leucothoë articulosa.——Fig. 3. Leucothoë furina.——Fig. 4. Leucothoë grandimanus.——Fig. 5. Seba innominata (*after Costa* (?)).——Fig. 6. Gossea microdeutopa.——Fig. 7. Aora gracilis.——Fig. 8. Aora typica (*after Nicolet*).——Fig. 9. Stimpsonia chelifera.

PLATE XXX.

Fig. 1. Microdeutopus Gryllotalpa.——Fig. 2. Microdeutopus Websterii.——Fig. 3. Microdeutopus anomalus.——Fig. 4. Microdeutopus tenuis.——Fig. 5. Microdeutopus versiculatus.——Fig. 6. Protomedeia hirsutimanus.

PLATE XXXI.

Fig. 1. Protomedeia fimbriata.——Fig. 2.† Protomedeia Whitei.——Fig. 3. Protomedeia pinguis.——Fig. 4. Bathyporeia pilosa.——Fig. 5. Bathyporeia Robertsoni.——Fig. 6. Bathyporeia pelagica.

PLATE XXXII.

Fig. 1. Niphargus Stygius.——Fig. 2. Niphargus fontanus.——Fig. 3. Niphargus Kochianus.——Fig. 4. Niphargus puteanus (*from an unpublished drawing by M. Guérin-Méneville*).——Fig. 5. Eriopis elongata (*after Bruzelius*).——Fig. 6. Crangonyx subterraneus.——Fig. 7. Crangonyx Ermannii.——Fig. 8. Gammarella brevicaudata.——Fig. 9. Gammarella Brasiliensis (*after Dana*).

PLATE XXXIII.

Fig. 1. Gammarella pubescens (*after Dana*).——Fig. 2. Melita palmata.——Fig. 3. Melita obtusata.——Fig. 4. Melita proxima.——Fig. 5. Melita Podager.——Fig. 6. Melita gladiosa.——Fig. 7. Melita valida (*after Dana*).——Fig. 8. Melita setipes (*after Dana*).

* The figures 9 and 10 in the Plate have been accidentally placed against the wrong animals; they should be transposed from one to the other.

† Figs. 2 and 3 in this Plate should be similarly transposed.

PLATE XXXIV.

Fig. 1. Melita anisochir (*after Dana*).——Fig. 2. Melita Fresnelli (*after Audouin*).——Fig. 3. Mœra grossimanus.——Fig. 4. Mœra truncatipes.——Fig. 5. Mœra Blanchardi (*from an unpublished drawing by M. Emile Blanchard*).——Fig. 6. Mœra Danæ.——Fig. 7. Mœra pocillimanus.——Fig. 8. Mœra pectenicrus.

PLATE XXXV.

Fig. 1. Mœra Loveni (*after Bruzelius*).——Fig. 2. Mœra furcicornis (*after Dana*).——Fig. 3. Mœra tenella (*after Dana*).——Fig. 4. Mœra Fuegiensis (*after Dana*).——Fig. 5. Mœra quadrimanus (*after Dana*).——Fig. 6. Mœra tenuicornis (*after Dana*).——Fig. 7. Eurystheus erythrophthalmus.——Fig. 8. Eurystheus bispinimanus.——Fig. 9. Amathia Sabinii.——Fig. 10. Amathia carinata.——Fig. 11. Amathia carino-spinosa.

PLATE XXXVI.

Fig. 1. Pallasea Cancellus.——Fig. 2. Gammaracanthus loricatus.——Fig. 3. Gammarus semicarinatus.——Fig. 4. Gammarus Pulex (*after Koch*).——Fig. 5. Gammarus subcarinatus.——Fig. 6. Gammarus Locusta.

PLATE XXXVII.

Fig. 1. Gammarus fluviatilis.——Fig. 2. Gammarus Edwardsii.——Fig. 3. Gammarus Camptolops.——Fig. 4. Gammarus Sitchensis.——Fig. 5. Gammarus Verreauxii.——Fig. 6. Gammarus fasciatus.——Fig. 7. Gammarus multifasciatus.——Fig. 8. Gammarus ornatus.——Fig. 9. Gammarus Redmanni.——Fig. 10. Gammarus Boreus.

PLATE XXXVIII.

Fig. 1. Gammarus Sundevallii (*after Rathke*).——Fig. 2. Gammarus tenuimanus.——Fig. 3. Gammarus Caspius.——Fig. 4. Gammarus marinus.——Fig. 5. Gammarus Ochotensis.——Fig. 6. Gammarus Arcticus.——Fig. 7. Gammarus Atchensis.——Fig. 8. Gammarus Maackii.——Fig. 9. Gammarus confervicolus.——Fig. 10. Gammarus locustoides.

PLATE XXXIX.

Fig. 1. Gammarus verrucosus.——Fig. 2. Gammarus Peloponnesius (*after Guérin-Méneville*).——Fig. 3. Gammarus Pugettensis (*after Dana*).——Fig. 4. Megamœra dentata.——Fig. 5. Megamœra serrata.——Fig. 6. Megamœra semiserrata.——Fig. 7. Megamœra longimanus.——Fig. 8. Megamœra Othonis.

PLATE XL.

Fig. 1. Megamœra Alderi.——Fig. 2. Megamœra brevicaudata.——Fig. 3. Megamœra longicauda (*after Brandt*).——Fig. 4. Megamœra Krŏyeri (*after Bell*).——Fig. 5. Megamœra aspera (*after Dana*).——Fig. 6. Megamœra Suluensis (*after Dana*).——Fig. 7. Megamœra albida (*after Dana*).——Fig. 8. Megamœra Peruviensis (*after Dana*).——Fig. 9. Megamœra Indica (*after Dana*).

PLATE XLI.

Fig. 1. Amphithoë rubricata.——Fig. 2. Amphithoë littorina.——Fig. 3. Amphithoë pelagica (*after Goodsir*).——Fig. 4. Amphithoë Gammaroides.——Fig. 5. Amphithoë lacertosa.——Fig. 6. Amphithoë Falklandi.——Fig. 7. Amphithoë Australiensis.——Fig. 8. Amphithoë Desmarestii.

PLATE XLII.

Fig. 1. Amphithoë Raymondi (*after Audouin*).——Fig. 2. Amphithoë filosa (*after Audouin*).——Fig. 3. Amphithoë Indica.——Fig. 4. Amphithoë picta (*after Rathke*).——Fig. 5. Amphithoë Chilensis (*after Nicolet*).——Fig. 6. Amphithoë Vaillantii (*after Lucas*).——Fig. 7. Amphithoë dubia (*after Templeton*).——Fig. 8. Amphithoë rubella.——Fig. 9. Amphithoë orientalis (*after Dana*).——Fig. 10. Amphithoë Tongensis (*after Dana*).

PLATE XLIII.

Fig. 1. Amphithoë peregrina (*after Dana*).——Fig. 2. Amphithoë brevipes (*after Dana*).——Fig. 3. Amphithoë Brasiliensis (*after Dana*).——Fig. 4. Amphithoë filicornis (*after Dana*).——Fig. 5. Sunamphithoë Hamulus.——Fig. 6. Sunamphithoë conformata.——Fig. 7. Sunamphithoë podoceroides.——Fig. 8. Podocerus pulchellus.——Fig. 9. Podocerus validus (*after Dana*).——Fig. 10. Podocerus variegatus.

PLATE XLIV.

Fig. 1. Podocerus falcatus.——Fig. 2. Podocerus pelagicus.——Fig. 3. Podocerus capillatus.——Fig. 4. Podocerus cylindricus.——Fig. 5. Podocerus ocius.——Fig. 6. Podocerus orientalis.——Fig. 7. Dercothoë emissitius.——Fig. 8. Dercothoë speculans.——Fig. 9. Dercothoë hirsuticornis.——Fig. 10. Dercothoë punctatus.

PLATE XLV.

Fig. 1. Cerapus tubularis (*after Say*).——Fig. 2. Cerapus abditus.——Fig. 3. Cerapus Hunteri.——Fig. 4. Cerapus rubricornis.——Fig. 5. Cerapus difformis.——Fig. 6. Cerapus macrodactylus (*after Dana*).——Fig. 7. Cerapus pugnax (*after Dana*).——Fig. 8. Cerapus Brasiliensis (*after Dana*).——Fig. 9. Siphonœcetus crassicornis.——Fig. 10. Siphonœcetus Whitei.

PLATE XLVI.

Fig. 1. Siphonœcetus typicus. —— Fig. 2. Nænia tuberculosa. ——Fig. 3. Nænia rimapalma.——Fig. 4. Nænia excavata.—— Fig. 5. Nænia undata.——Fig. 6. Cyrtophium Brasiliense (*after Dana*).——Fig. 7. Cyrtophium orientale (*after Dana*).——Fig. 8. Cyrtophium Darwinii.——Fig. 9. Cyrtophium tuberculatum (*after Bruzelius*).——Fig. 10. Cratippus tenuipes.

PLATE XLVII.

Fig. 1. Dryope irrorata.——Fig. 2. Dryope crenatipalma.—— Fig. 3. Unciola leucopes.——Fig. 4. Corophium longicorne.—— Fig. 5. Corophium spinicorne.——Fig. 6. Corophium crassicorne (*after Bruzelius*).——Fig. 7. Corophium (?) quadriceps (*after Dana*). —— Fig. 8. Clydonia gracilis (*after Dana*).——Fig. 9. Clydonia longipes (*after Dana*).——Fig. 10. Icilius ellipticus (*after Dana*).

PLATE XLVIII.

Fig. 1. Chelura terebrans.——Fig. 2. Lestrigonus exulans.—— Fig. 3. Lestrigonus Gaudichaudii.——Fig. 4. Lestrigonus Kinahani. ——Fig. 5. Lestrigonus rubescens.——Fig. 6. Lestrigonus Fabreii (*after Dana*).——Fig. 7. Lestrigonus ferus (*after Dana*).——Fig. 8. Lestrigonus fuscus (*after Dana*).——Fig. 9. Hyperia galba.—— Fig. 9″. Hyperia galba -ω.——Fig. 10. Hyperia Cyaneæ.

PLATE XLIX.

Fig. 1. Hyperia Medusarum.——Fig. 2. Hyperia macrocephala (*after Dana*).——Fig. 3. Hyperia agilis (*after Dana*).——Fig. 4. Hyperia trigona.——Fig. 5. Hyperia oblivia.——Fig. 6. Vibilia Edwardsii.——Fig. 7. Vibilia Edwardsii -ω.—— Fig. 8. Vibilia affinis.——Fig. 9. Vibilia Jeangerardii (*after Lucas*).——Fig. 10. Vibilia depilis (*after Templeton*).

PLATE L.

Fig. 1. Cyllopus Magellanicus.——Fig. 2. Cyllopus Lucasii.—— Fig. 3. Cyllopus Danæ.——Fig. 4. Dairinia debilis (*after Dana*). ——Fig. 5. Dairinia depressa (*after Dana*).——Fig. 6. Dairinia inæquipes (*after Dana*).——Fig. 7. Cystosoma Neptuni (*after Guérin-Méneville*).——Fig. 8. Themisto antarctica.——Fig. 9. Themisto Guerinii.——Fig. 10. Themisto Gaudichaudii (*after Guérin-Méneville*).——Fig. 11. Themisto arctica (*after Kröyer*).——Fig. 12. Themisto crassicornis (*after Kröyer*).

PLATE LI.

Fig. 1. Phronima sedentaria.——Fig. ⊗. Doliolum papillosum (*Delle Chiaje*), in which Phronima resides.——Fig. 2. Phronima custos. —— Fig. 3. Phronima Borneensis. —— Fig. 4. Phronima Atlantica (*after Guérin-Méneville*).——Fig. 5. Phrosina semilunata. ——Fig. 6. Phrosina Nicetensis.——Fig. 7. Phrosina longispina. ——Fig. 8. Primno macropa (*after Guérin-Méneville*).——Fig. 9. Anchylomera antipodes ♂.——Fig. 10. Anchylomera antipodes ♀.

PLATE LII.

Fig. 1. Anchylomera Blossevillei.——Fig. 2. Anchylomera Hunteri (*after Edwards*).——Fig. 3. Anchylomera abbreviata.——Fig. 4. Anchylomera sedentaria.——Fig. 5. Anchylomera purpurea.—— Fig. 6. Anchylomera Thyropoda.——Fig. 7. Thyropus ovoides.—— Fig. 8. Thyropus ferus.——Fig. 9. Platyscelus Rissoinæ.——Fig. 10. Platyscelus serratus.——Fig. 11. Platyscelus serratus ⌣.

PLATE LIII.

Fig. 1. Dithyrus Faba (*after Dana*).——Fig. 2. Brachyscelus crusculum ♀.——Fig. 3. Brachyscelus crusculum ⌣.——Fig. 4. Thamyris antipodes.——Fig. 5. Amphipronoë cuspidata.——Fig. 6. Pronoë capito (*after Dana*).——Fig. 7. Pronoë brunnea (*after Dana*). ——Fig. 8. Lycæa ochracea.——Fig. 9. Phorcus Raynaudii.—— Fig. 10. Phorcus hyalocephalus (*after Dana*).

PLATE LIV.

Fig. 1. Synopia ultramarina (*after Dana*).——Fig. 2. Synopia angustifrons (*after Dana*).——Fig. 3. Oxycephalus piscator (*after Edwards*).——Fig. 4. Oxycephalus oceanus (*after Guérin-Méneville*).——Fig. 5. Oxycephalus tuberculatus.——Fig. 6. Rhabdosoma armatum.—— Fig. 7. Rhabdosoma Whitei. —— Fig. 8. Dulichia spinosissima.——Fig. 9. Dulichia porrecta.——Fig. 10. Dulichia falcata.

PLATE LV.

Fig. 1. Proto pedata.——Fig. 2. Proto Goodsirii.——Fig. 3. Proto elongata (*after Dana*).——Fig. 4. Protella Phasma.——Fig. 5. Protella gracilis (*after Dana*).——Fig. 6. Cercops Holbölli.—— Fig. 7. Caprella linearis.——Fig. 8. Caprella lobata.

PLATE LVI.

Fig. 1. Caprella tabida (*after Lucas*).——Fig. 2. Caprella typica (*after Kröyer*).——Fig. 3. Caprella septentrionalis.——Fig. 4. Caprella scaura (*after Templeton*).——Fig. 5. Caprella cornuta (*after Dana*).——Fig. 6. Caprella acutifrons. ——Fig. 7. Caprella nodosa (*after Templeton*).——Fig. 8. Caprella geometrica.——Fig. 9. Caprella dilatata (*after Dana*).——Fig. 10. Caprella robusta (*after Dana*).——Fig. 11. Caprella acuminifera.

PLATE LVII.

Fig. 1. Caprella calva.——Fig. 2. Caprella acanthifera.——Fig. 3. Caprella spinosissima (*after Bell*).——Fig. 4. Caprella longicollis (*after Lucas*).——Fig. 5. Caprella æquilibra.——Fig. 6. Caprella tenella (*after Dana*).——Fig. 7. Caprella attenuata (*after Dana*).——Fig. 8. Caprella aculeata (*after Dana*).——Fig. 9. Caprella ultima.

PLATE LVIII.

Fig. 1. Cyamus gracilis.——Fig. 2. Cyamus Ceti.——Fig. 3. Cyamus ovalis.——Fig. 4. Cyamus abbreviatus.——Fig. 5. Cyamus Thomsoni (*after Gosse*).

ERRATA.

Page 1, for *Westwoodia* read *Westwoodilla*.
,, 11, after *Orchestoidea Fischerii* insert Pl. II. fig. 1.
,, 12, after *Orchestoidea tuberculata* insert Pl. II. fig. 2.
,, 21, *for* Mr. Hook *read* Dr. Hooker.
,, 163 and elsewhere, for *Microdentopus* read *Microdeutopus*.

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THE END.

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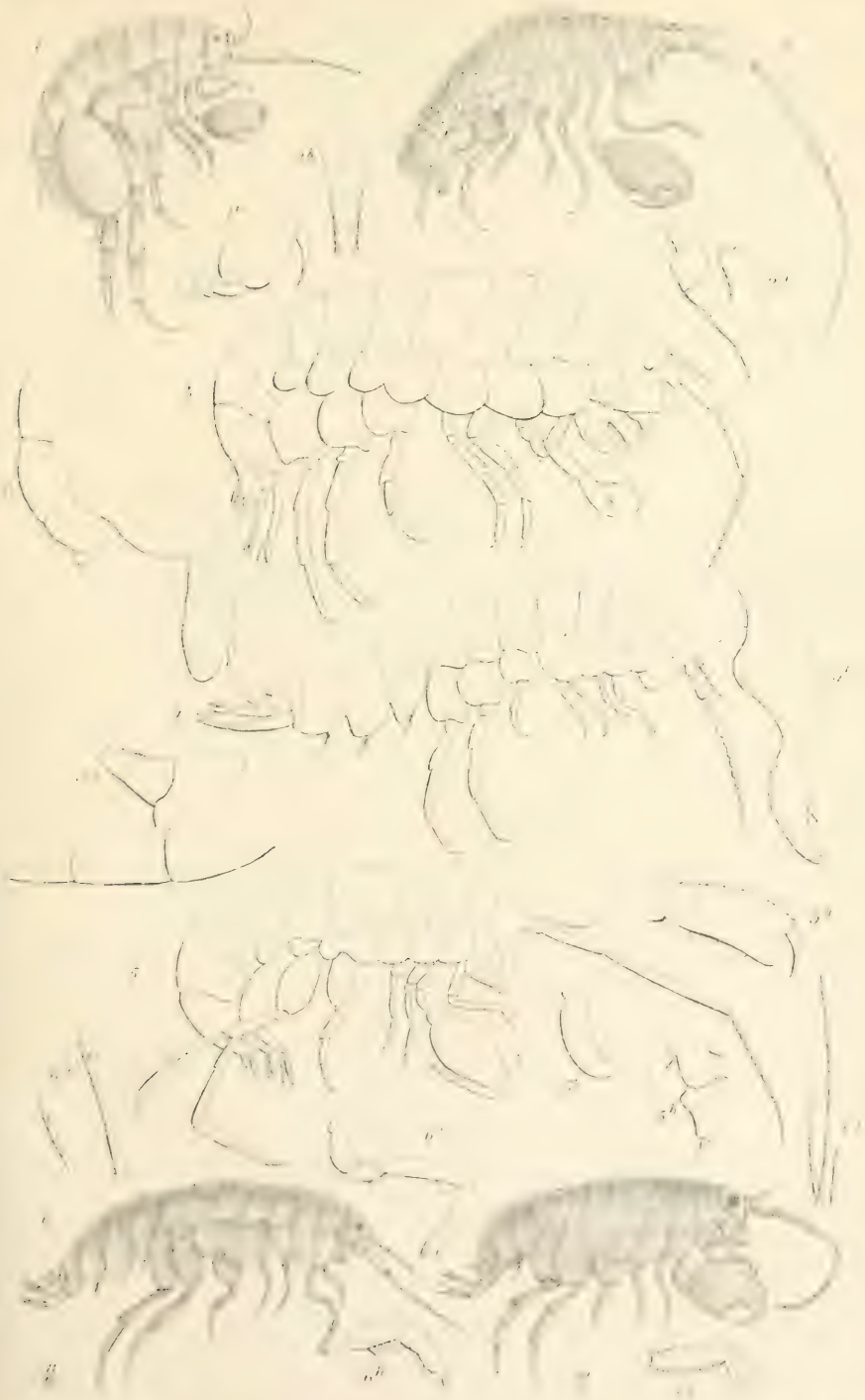
Talitrus Lamatus 2 Orchestia Gilia 3 Nevi Zealandiæ 4 O. scabripes

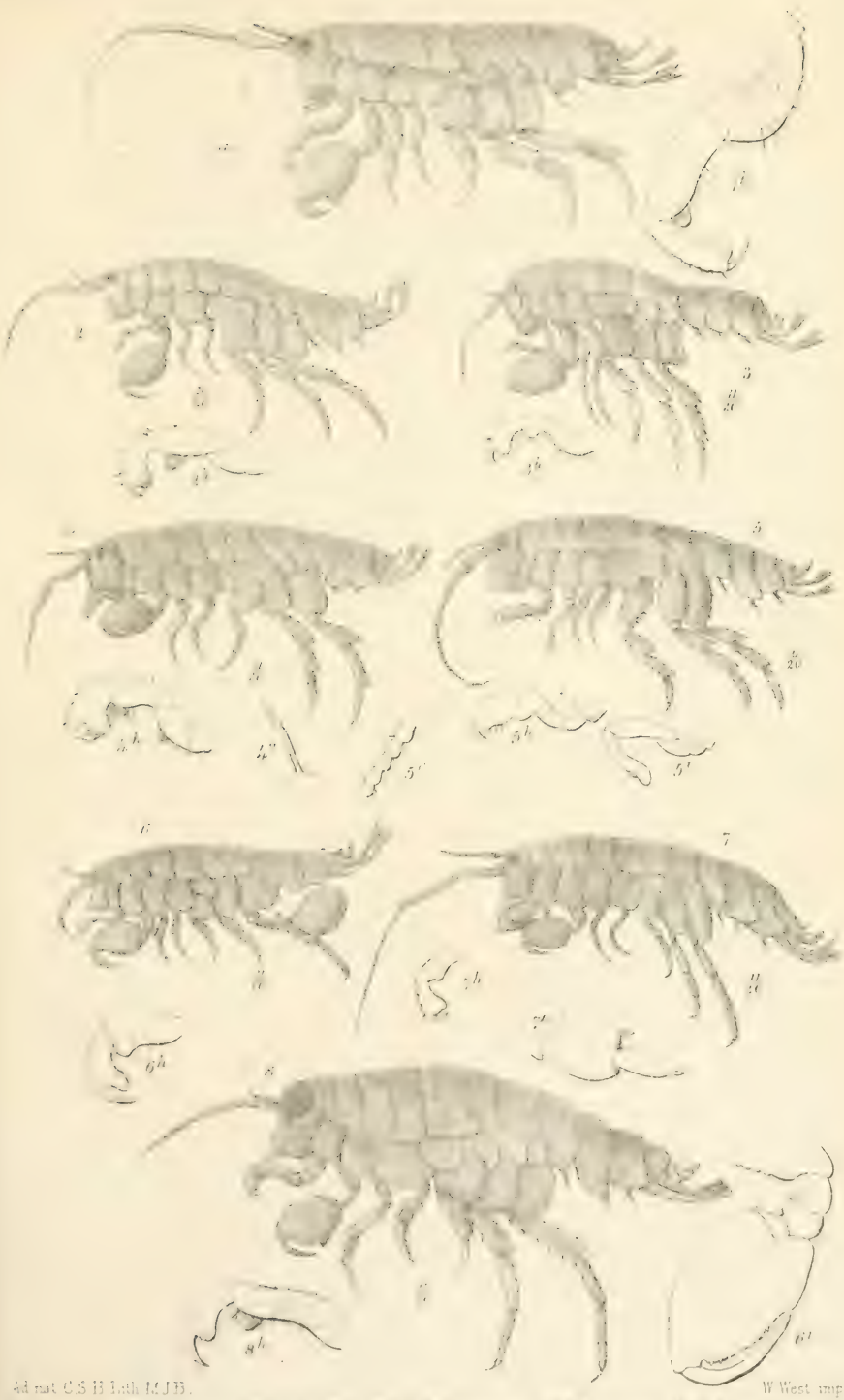
Ad nat. del. B. Link M.D.

Wilson imp.

Platurus platycheles. 2. Orchestia Fuegensis. 3. O. Aucklandiæ. 4. O. Ochotensis. 5. Allorchestes Piedmontensis. 6. O. Ochotensis. 7. Nicea Lucasii. 8. Orchestia Onlensis. 9. O. brevicornis.



etensis. 4 O Brachiensis. 5 T. Darchestia gracilis
6 Talorchestia? Africana. 7 T Quoyana.

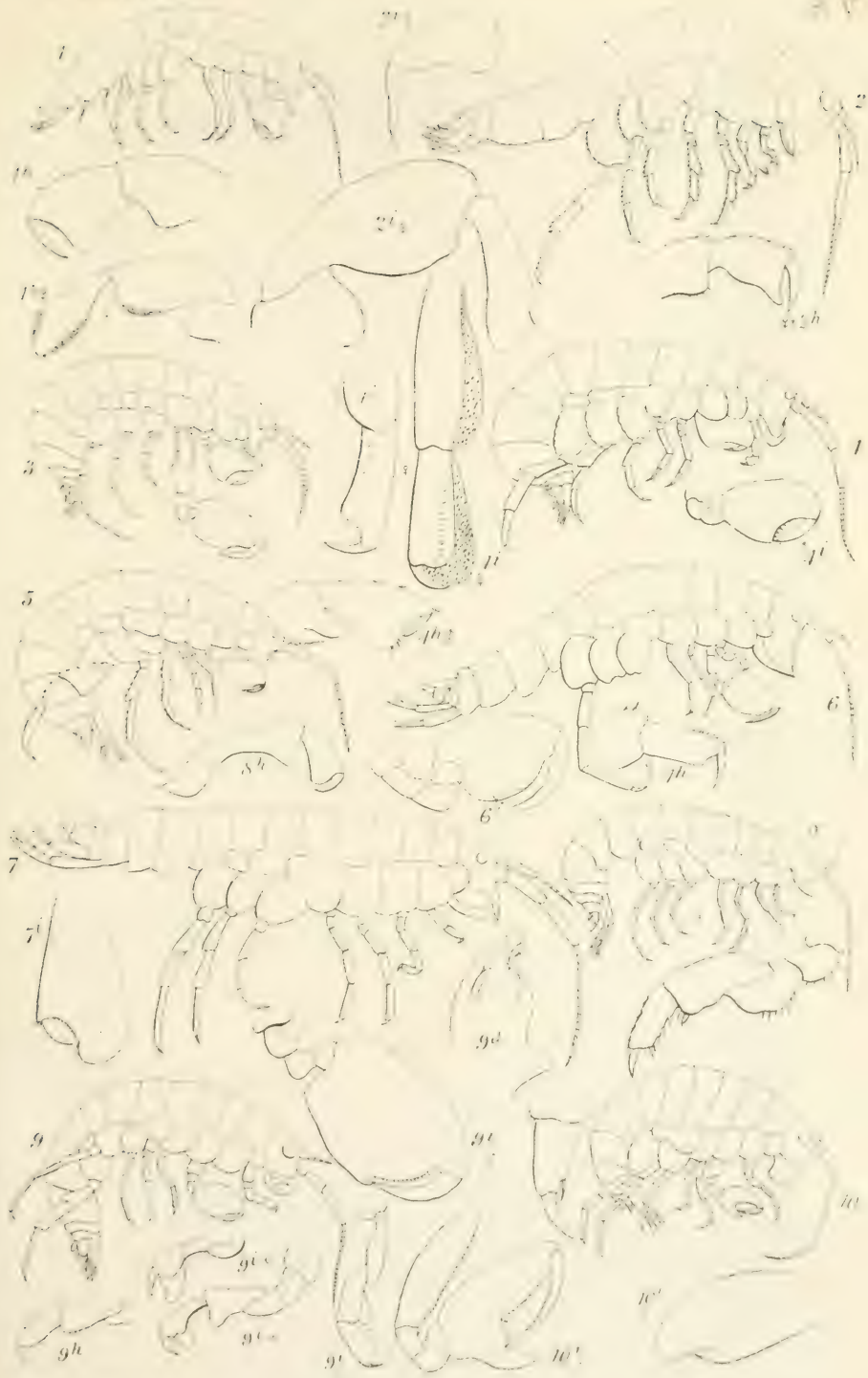


Ad nat. C.S.B. Lith. M.J.B. W. West. imp.

6 Telluris. 7 6 Sylvicola. 8. 6 megalophthalma.

Ad nat C S B lith M J B W West imp.

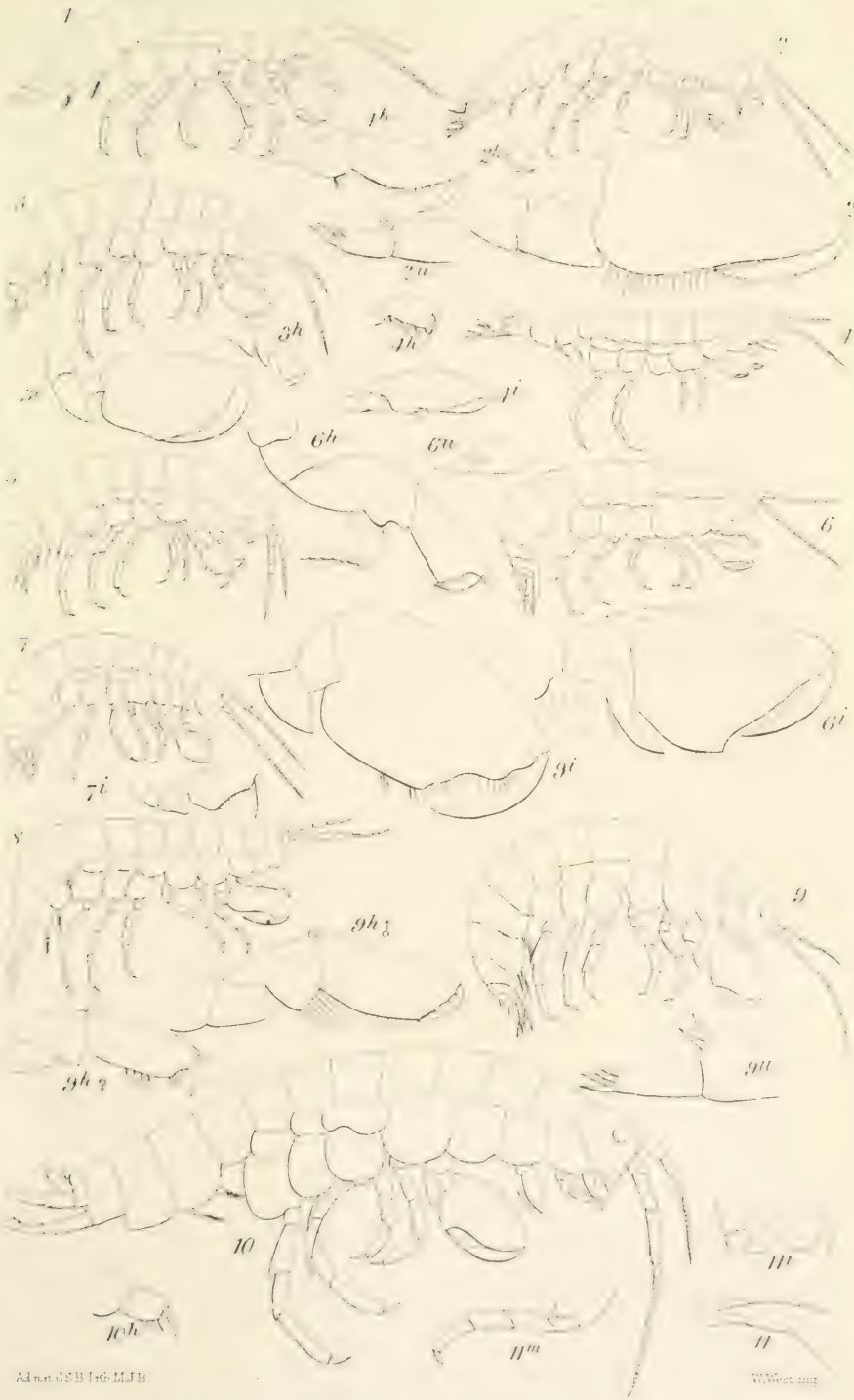
1. Crenestia Cloquetii. 2. O. Capensis. 3. O. Desbayesii. 4. O. telluris *fem.* 5. O. Mediterranea
6. O. Trigonocheirus. 7. O. Scutigerula. 8. O. littorea. 9. O. Spinipalma. 10. O. tenuis.



1. Ordlestia nuda. 2. O. bilensis. 3. O. quadrimana. 4. O. serrulata. 5. O. dispar.
6. O. ickeringii. 7. O. kimmeridgensis. 8. O. albiensis. 9. O. anchorella. 10. O. gryphus.

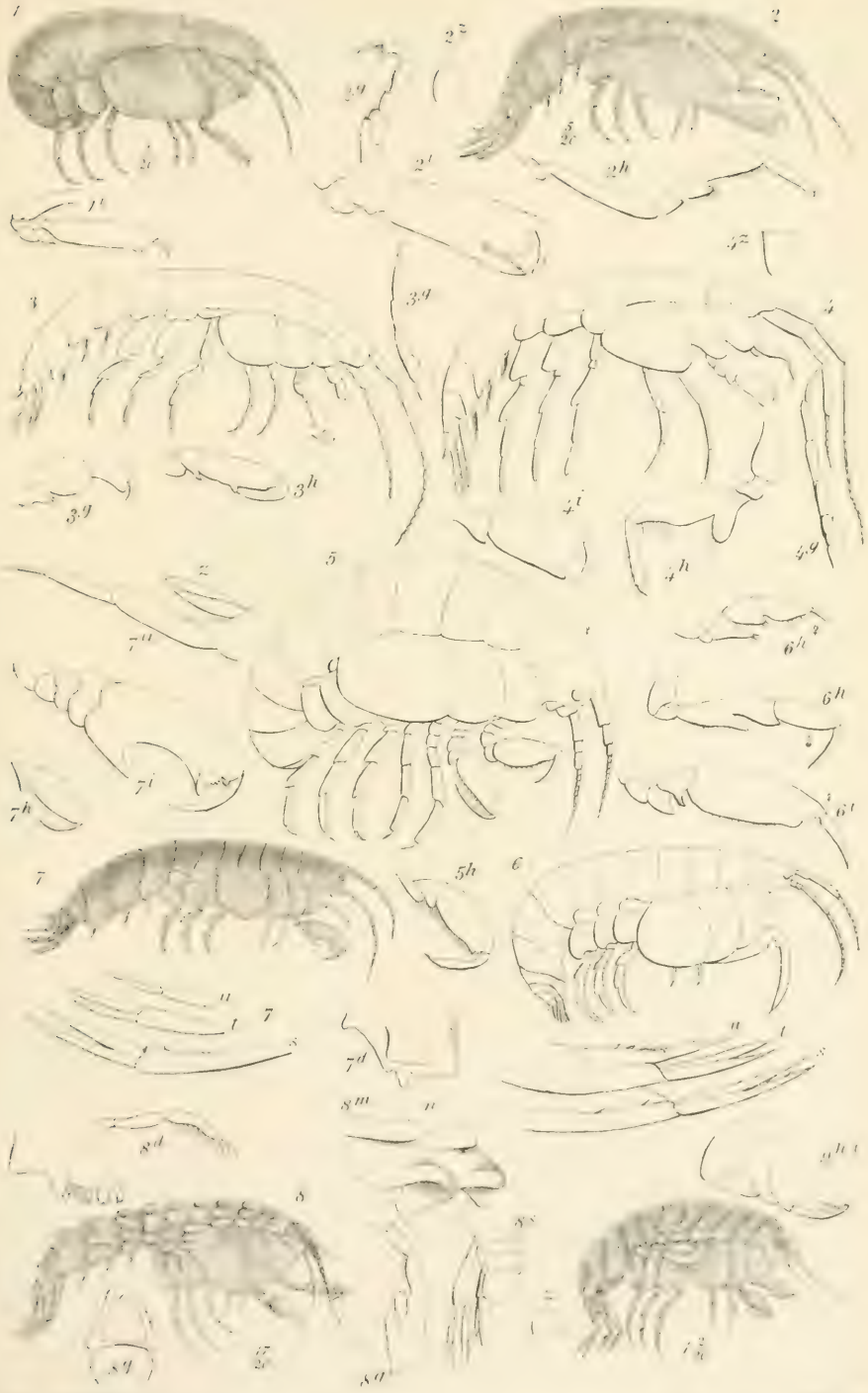
Adam C&E Inh M J B W West imp

rchestes Xnickerbockeri 2 A carinatus 3 A Novæ-Zealandiæ. 4 A Hilssomi. 5 A Sayi
6 A macrophthalmus 7 A Inca 8 A imbricatus 9 A Gaimardii 10 A Pereiri



1. Allorchestes verticellatus. 2. A. lutipalma. 3. A. gracilis. 4. A. brevicornis. 5. A. humilis.
6. A. australis. 7. A. orientalis. 8. A. gramineus. 9. A. medius. 10. A. pugettensis.

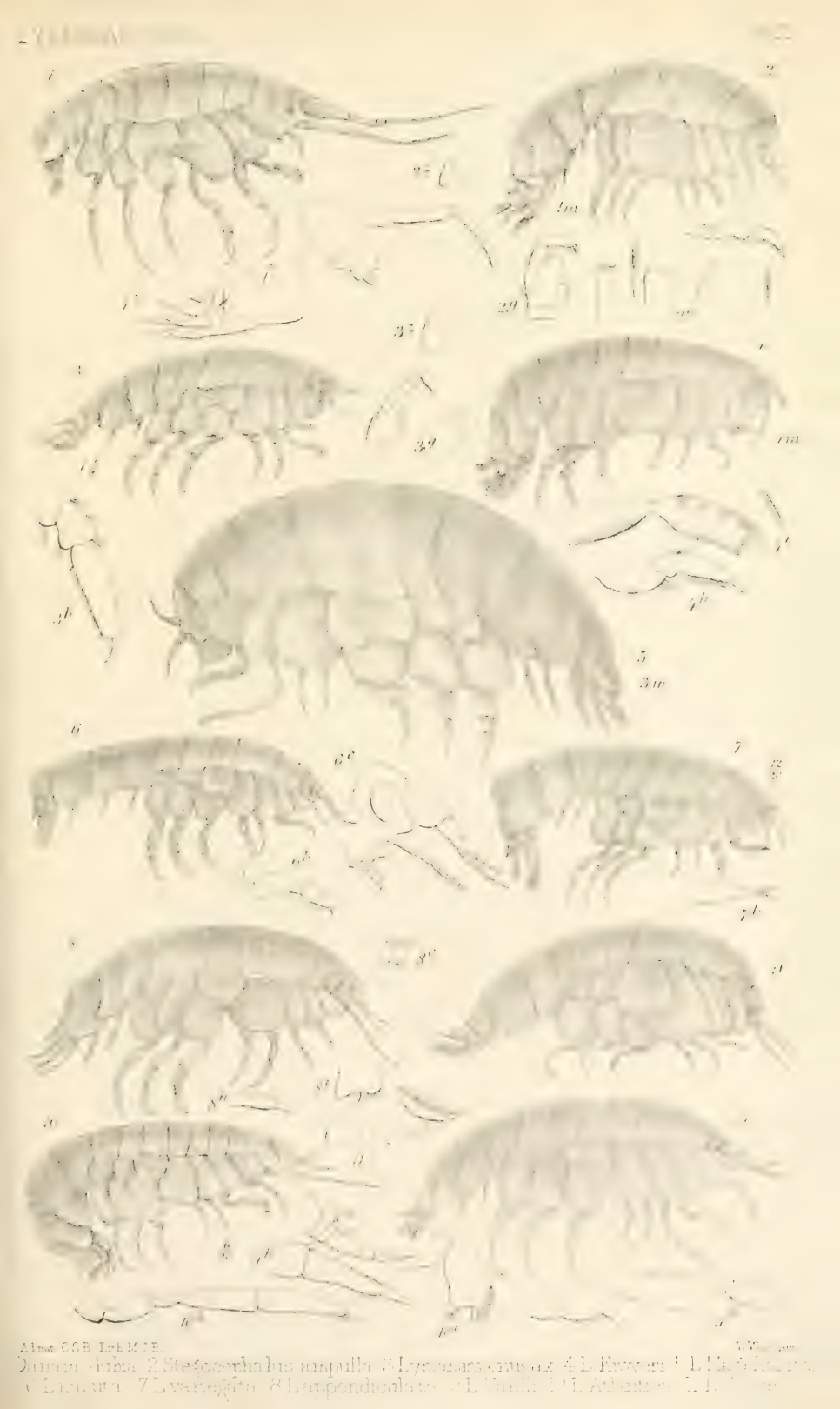
1 Allorchestes Haswellensis 2 A. littoralis 3 Nicea Edwardsiana.
4 Montagua monoculoides 5 M. marina. 6 M. Alderi



Adam & S.B. Test M.D.

W.West imp.

1 Montagua longimana. 2 M pelleziana. 3 M glacialis 4 M clypeata. 5 M Guerini
6 Stenothoe validus 7 Scirpeatus 8 Pleustes tuberculatus. 9 Pronophus



Abad. C.S.B. Lab. M.G.B. [illegible]
Damon lobus. 2 Stegocephalus ampullo. 3 Lysianassa magna. 4 L. Kroyeri. 5 L. [illegible]
6 L. longicornis. 7 L. variegata. 8 L. appendiculata. 9 L. Norvegica. 10 L. Atlantica. 11 L. [illegible]

Adnat. C.S.D. lith. M.J.B. W.West imp.

Anonyx. 1. A. lamellatus. 2. A. Sarsii. 3. A. longipes. 4. A. nugax. 5. A. tumidus. 6. A. tumidus.

Adxnt. C.S.B. Lith. M.J.B. W.West, imp

1. Anonyx obesus. 2. A. denticulatus. 3. A. Exiguus. 4. A. Holböllii.
5. A. nobilis. 6. A. minutus. 7. A. lagena. 8. A. ampulloides. 9. A. nanus.

Aires & B. Lith. M.S.B. W.West. imp.

1 Anonyx Plautus. 2 A. punctatus. 3 A. Annulatus. 4 A. longipes.
5 A. ampulla. 6 A. Fuegensis. 7 A. tumidus. 8 A. lagena.

Alan C.S.P. Lith.

1 Pontoporeia femorata. 2 P affinis. 3 Opis typica. 4 O. Eschrichtii.
5 Callisoma crenata. 6 ♀ Hoplonyx. 7 Allorchestes littoralis. 8 Urothoe elegans.

Adam CSB Ltn MJB WWest imp

1 Ampelisca Gammarida 2 A argena 3 A Bellana 4 A lunicola 5 A Japonica

Ad nat. C.S.H. lith. M.J.B. W.West imp.

1. Phoxus simplex. 2. Ph. Holbolli. 3. Ph. plumosus. 4. Graya imbricata.
5. 6. Westwoodilla cœcula.

A Inst. C S B Lith. M.J.B W.West imp.

1.Œdicerus Novi-Zealandiæ. 2.Monoculodes carinatus 3.M.Stimpsoni 4.Kroyea arenaria.
5.Westwoodilla hyalina. 6.Amphilochus manudens. 7.Darwinea compressa.

W.West imp

Sulcator arenarius.

Al. nat. C.S.B. Lith. M.J.B. W.West imp

1. Urothoë Bairdii. 2. Urothoë marinus.

Uroptus bicornutus 2 U.elegans 3 U.rostratus. 4 U.obstructus 5 Leipeburgia pallida

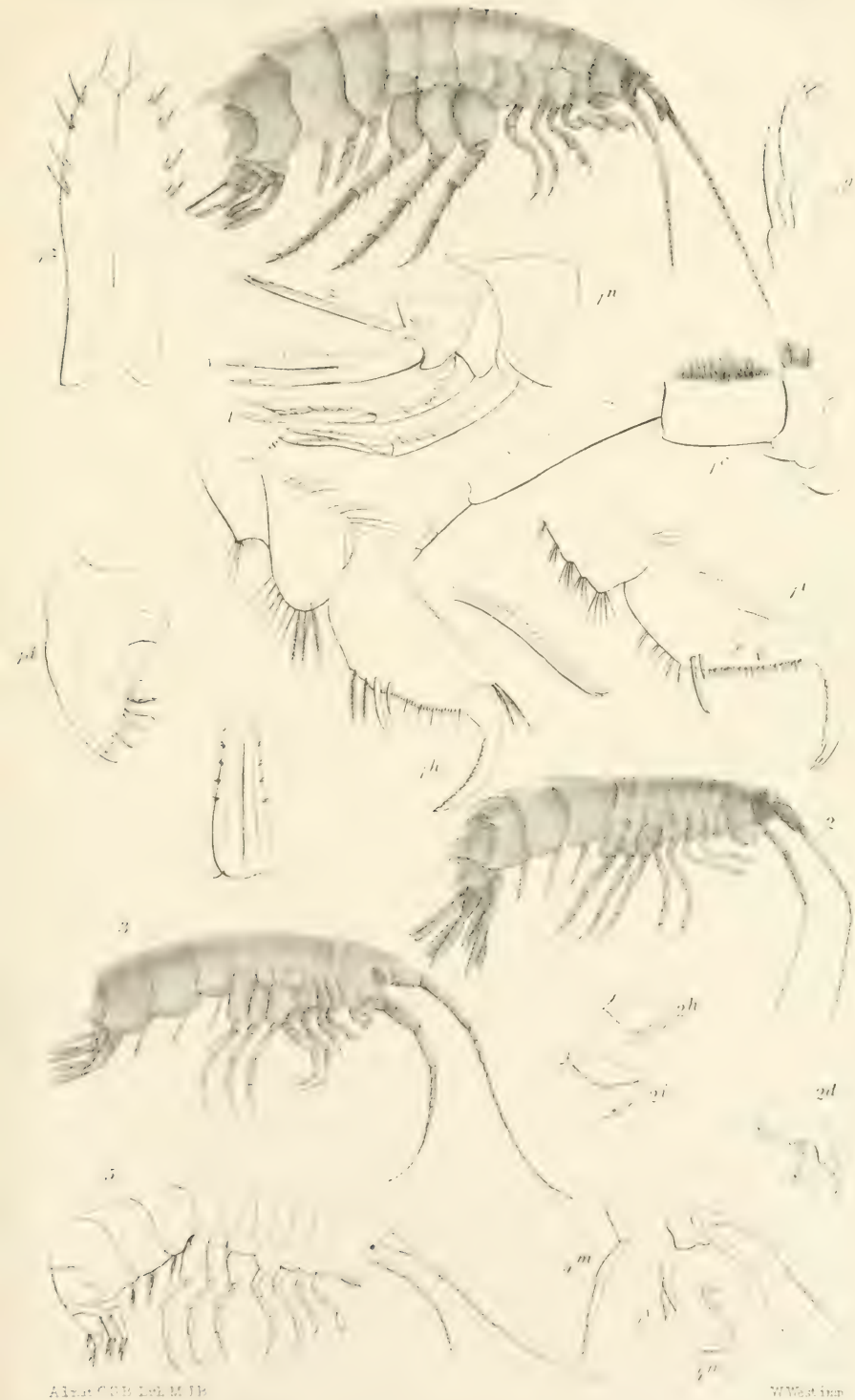
1. Phædra Kinahani. 2. P. antiqua. 3. Prosoponiscus problematicus.

Adam & S.B. Lith. M.I.B. W. West imp.

1. Hyale pontica. 2. Fidius serratus. 3. P. Risso anus. 4. Grœa Pugettensis. 5. Guerinia Nicœensis.

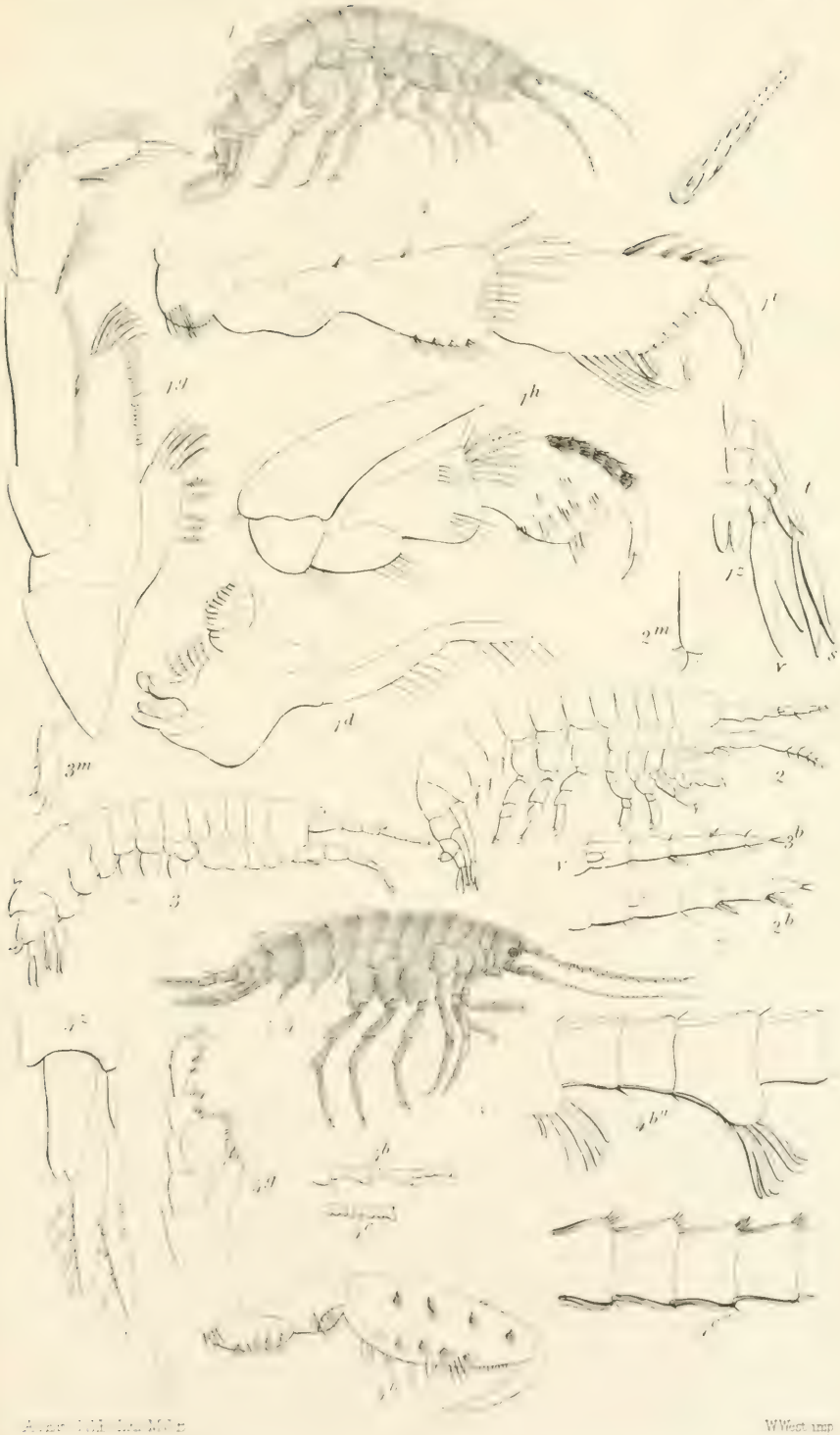
1. Iscœa Montagua. 2. Iphimedia obesa. 3. I. Eblanœ.

1. Iphimedia nodosa. 2. Otus carinatus. 3. Acanthonotus testudo. 4. A. Serratus.
5♂ & 6♀. Brandtia latissima.



Alex. Cas. Lith. M. Pr. W.West imp.

1 Dexamine spinosa 2 D Bloosevilliana 3 D Longirima 4 Dtennicornis 5 Lucrassipes



Arthur Hill del. et lith.

W.West imp.

1. Atylus carinatus. 2 & 3. Young d°. 4. A. Huxleyanus.

Adam C S B Lith M & B.

W West imp.

1 Agnes Wilcoxi. 2 A. Swammerdamii. 3 A. Gibbosus. 4 A. Americanus. 5 A. inermis. 6 A. crenulatus

1. Atylus bispinosus. 2. A. simplex. 3. A. fissicaudu. 4. A. Capensis. 5. Pherusa pulchella.
6. Ph. cirrus. 7. Ph. bicuspis. 8. Ph. Costata. 9. Ph. fucicola. 10. Ph. Barretti.

Adnat. C.S.B. Jeth. M.J.B.

Paramphithoe histryx. 2. Calliope leviuscula. 3. C. Ossiani. 4. C. Grandoculus.
5. Amphithonotus Edwardsii. 6. Eusirus Cuspidatus. 7. I.ª Young.

Adam C. & B. 1th. M.J.D. W.West, imp.

1. Cumaclavicula. 2. Leucothoe articulosa. 3. L. furcina. 4. L. Grandimanus. 5. Cerapus tubularis.
6. Caprella acutifrons. 7. Acanthogrecilis. 8. A. hystrix. 9. Lamprosoma Chelifera.

1 Microdentopus gryllotalpa. 2 M. Websteri. 3 M. anomalus. 4 M. tenuis.
5 M. versiculatus. 6 Protomedia hirsutimanus.

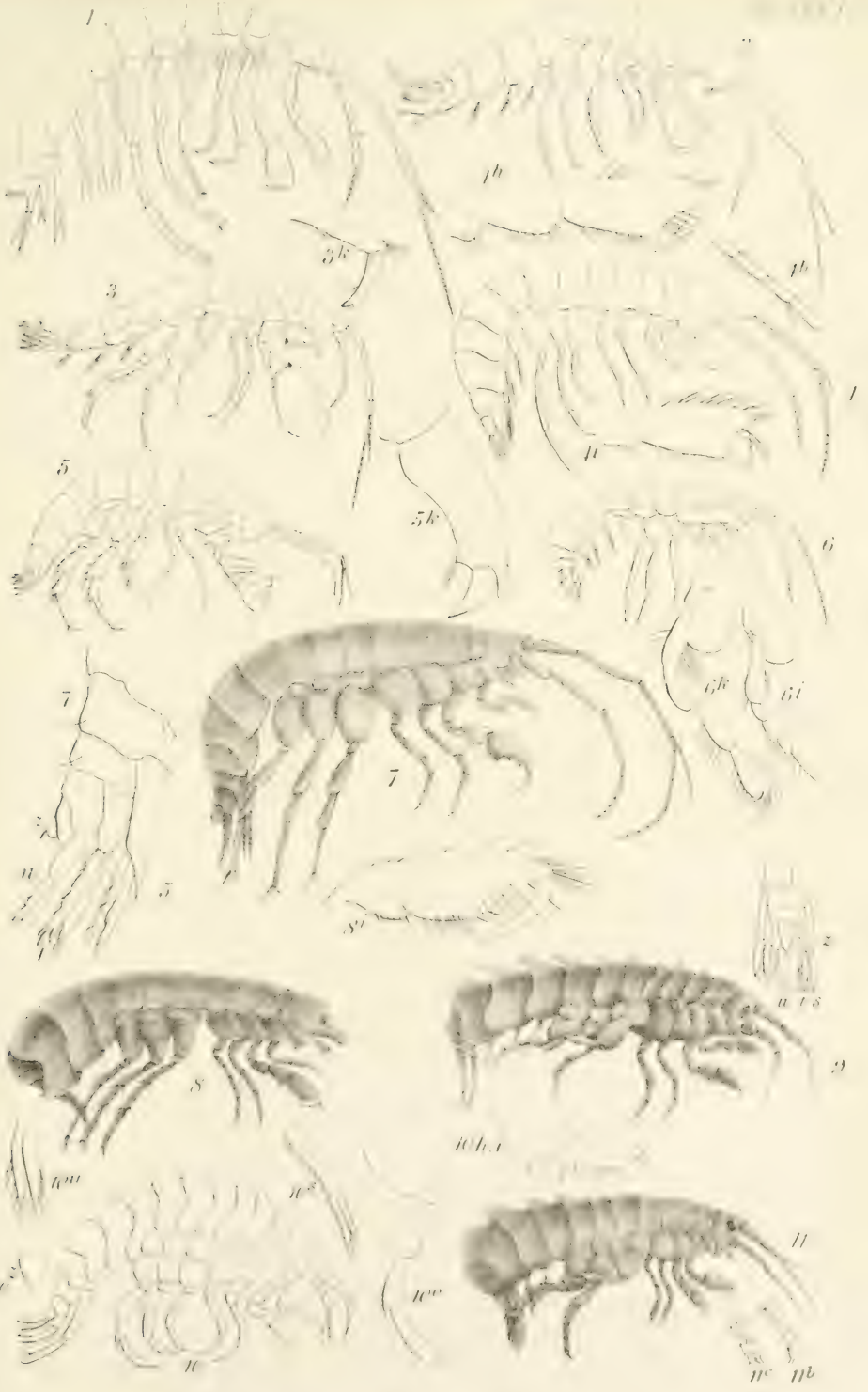
1. Protomedia fimbriata. 2. P. Whiteï. 3. P. pinguis. 4. Bathyporeia pilosa.
5. B. Robertsoni. 6. B. pelagica.

1. Niphargus stygius. 2. N. fontanus. 3. N. kochianus. 4. N. puteanus.
5. Crangonyx. 6. Crangonyx subterraneus. 7. C. Grubeni.
8. Gammarella brevicaudata. 9. G. Brasiliensis.

1. Gammarella pubescens. 2. Melita palmata. 3. M. obtusata. 4. M. proxima.
5. M. podager. 6. M. gladiosa. 7. M. valida. 8. M. setipes.

W.West, imp.

1. Melita ansedeni. 2. M. Fresnelii. 3. Moera grossimanus. 4. M. truncatipes.
5. M. Blanchardi. 6. M. Dancæ. 7. M. pœcilimanus. 8. M. pectinicrus.



1. Moera Loveni. 2. M. furciconnis. 3. M. tenella. 4. M. fuegoensis. 5. M. quadrimanus.
6. M. tenuicornis. 7. Parvisthoes erythrophthalmus. 8. E. hispinimanus.
9. Amathia Sabinii. 10. A. carinata. 11. A. carino-spinosa.

W.West, imp.

1. Pallasea cancellus. 2. Gammaracanthus loricatus.
3. Gammarus semicarinatus. 4. G. pulex. 5. G. subcarinatus. 6. G. locusta.

1. Gammarus locusta. 2. G. Edwardsii. 3. G. marinus. 4. Calliopius laeviusculus. 5. Weyprechtia pinguis.
6. G. fasciatus. 7. G. mulfasciatus. 8. G. ornatus. 9. G. Redmanni. 10. G. boreus.

1. Gammarus Sundevallii. 2. G. zaddachi. 3. G. Caspius. 4. G. marinus. 5. G. Ochotensis.

Amer.C.S.P. Ech.M.J.B. W.W.Lang.

1. Gammarus verrucosus. 2. G. cloparensis. 3. G. nagettensis. 4. Megamarus dentatus. 5. M. serratus. 6. M. semiserratus. 7. M. longimanus. 8. M. thomsi.

1. Megamoera Aldeni. 2. M. brevicandata. 3. M. longicanda. 4. M. Kroyeri. 5. M. asper. 6. M. Suhensis. 7. M. albida. 8. M. Peruviensis. 9. M. indica.

1. Amphithoe rubricata. 2. A. littorina. 3. A. pelagica. 4. A. gammeroides.
5. A. hortensis. 6. A. Pallidula. 7. A. australiensis. 8. A. Desmarestii.

Adrets. del & lith. Mulle

1. Amphithoe Raymondii. 2. A. filosa. 3. A. Indica. 4. A. Picta. 5. A. Chilensis.
6. A. Vaillantii. 7. A. rubra. 8. A. rubella. 9. A. Orientalis. 10. A. Tingensis.

Ad nat. C.S.B. lith. M.J.B. W.West imp.

1 Amphithoe peregrina 2 A. crenipes 3 A. Brandtiana 4 A. flucosa 5 Amaryphthoe hamata
6 G. verbanata 7 G. podocerunda 8 Podocerus pulchellus 9 P. validus 10 P. variegatus

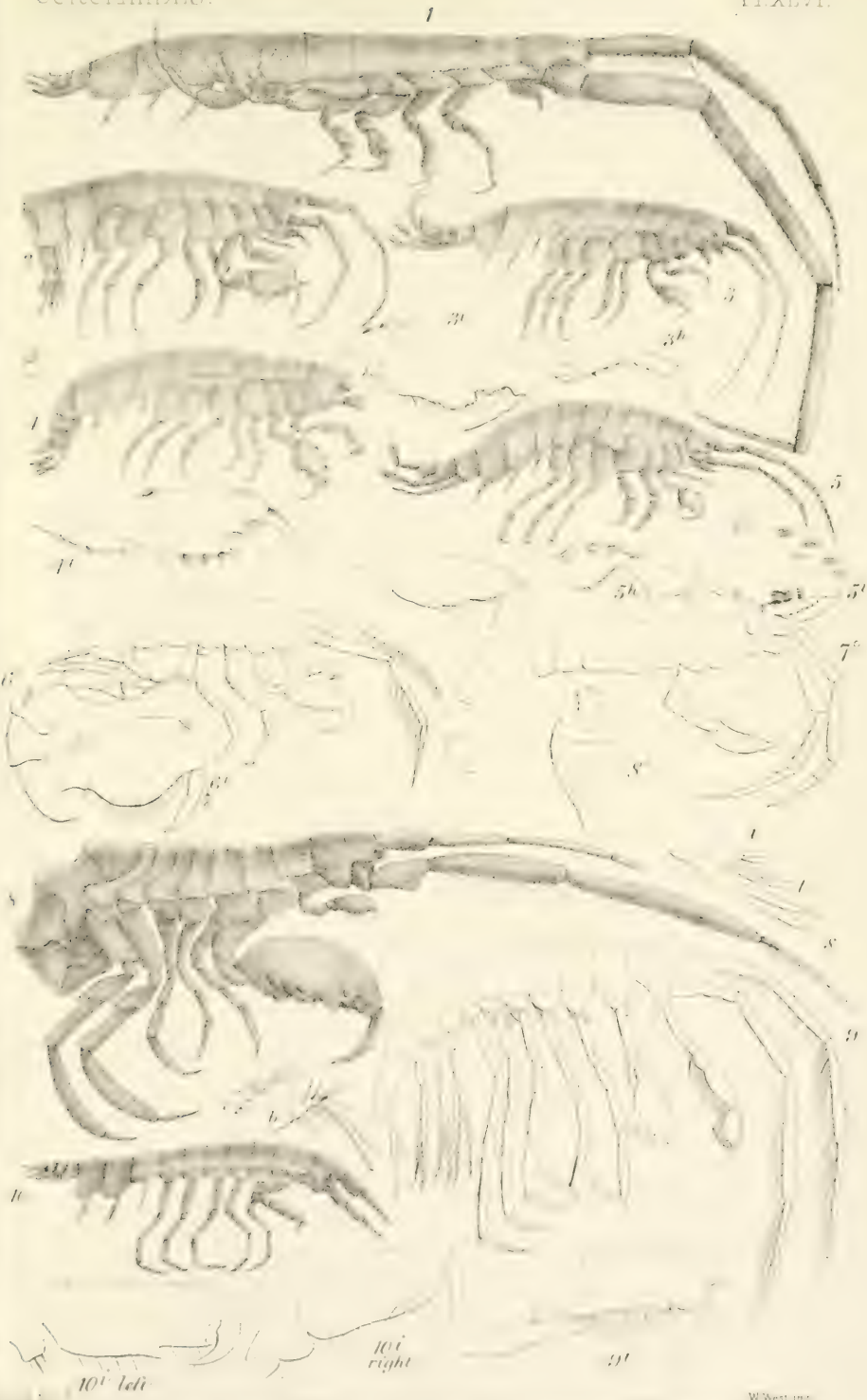
Arbour & Co. lith. Mall.

W.West imp.

1. Podocerus falcatus. 2. P. pelagicus. 3. P. capillatus. 4. P. cylindricus. 5. P. Ocius.
6. P. Orientalis. 7. Dercothoe ornatus. 8. D. speculans. 9. D. hirsuticornis. 10. D. punctatus.

Ad nat. C.S.B. Lith. M.A.B. W.West imp.

1. Cerapus tubularis. 2. C. abditus. 3. C. Hunteri. 4. C. rubricornis. 5. C. difficilis. 6. C. unguiculatus. 7. C. pugnax. 8. C. Brasiliensis. 9. Siphonoecetus crassicornis. 10. S. Whitei.

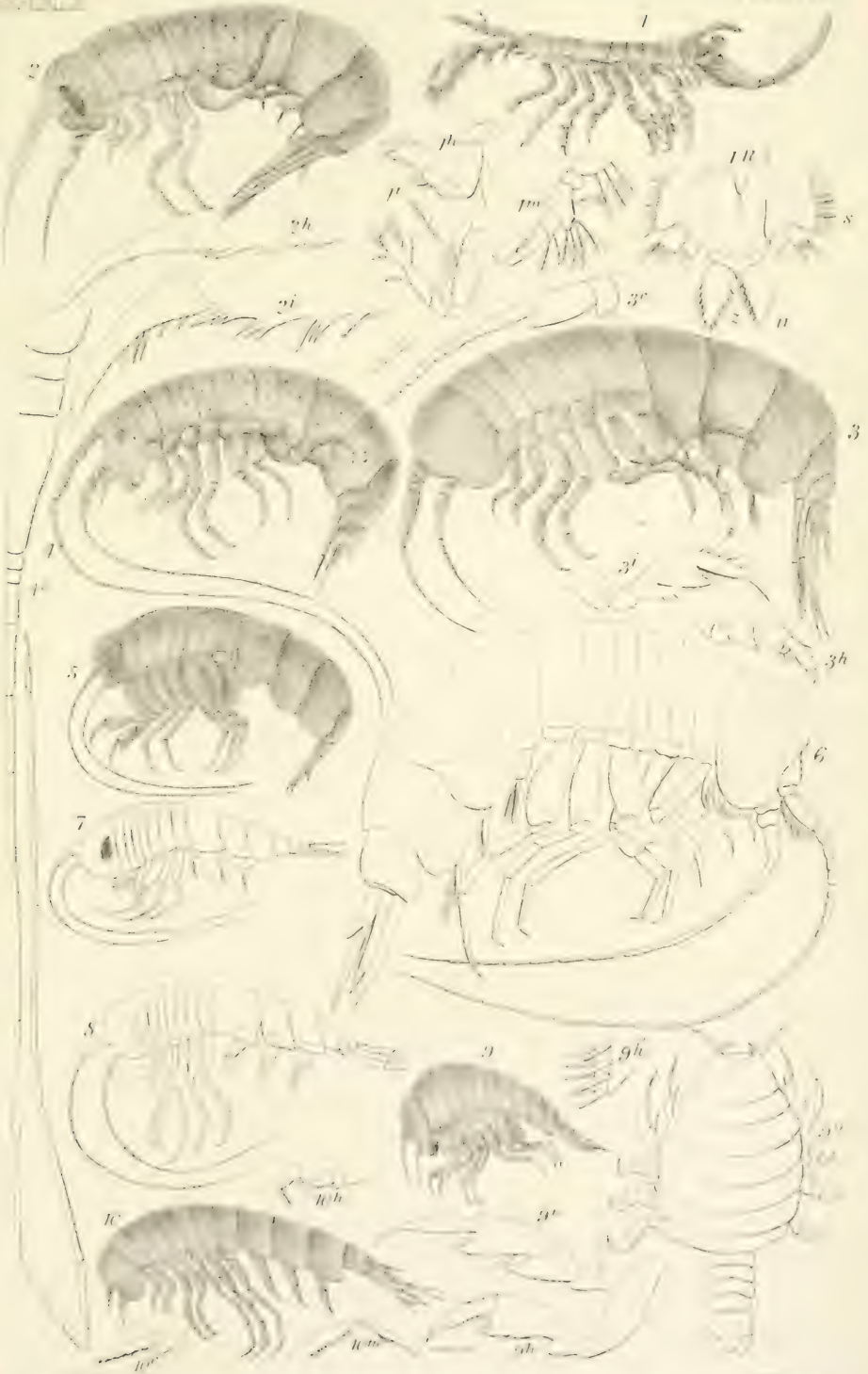


W.West imp.

1. Siphonoecetus typicus. 2. Nannia tuberculosa. 3. N. unimanalata. 4. N. Excavata. 5. N. undata. 6. Cyrtophium ? rasilicnsis. 7. C. orientale. 8. C. Darwinii. 9. C. tuberculatum. 10. Cratippus tenuipes.

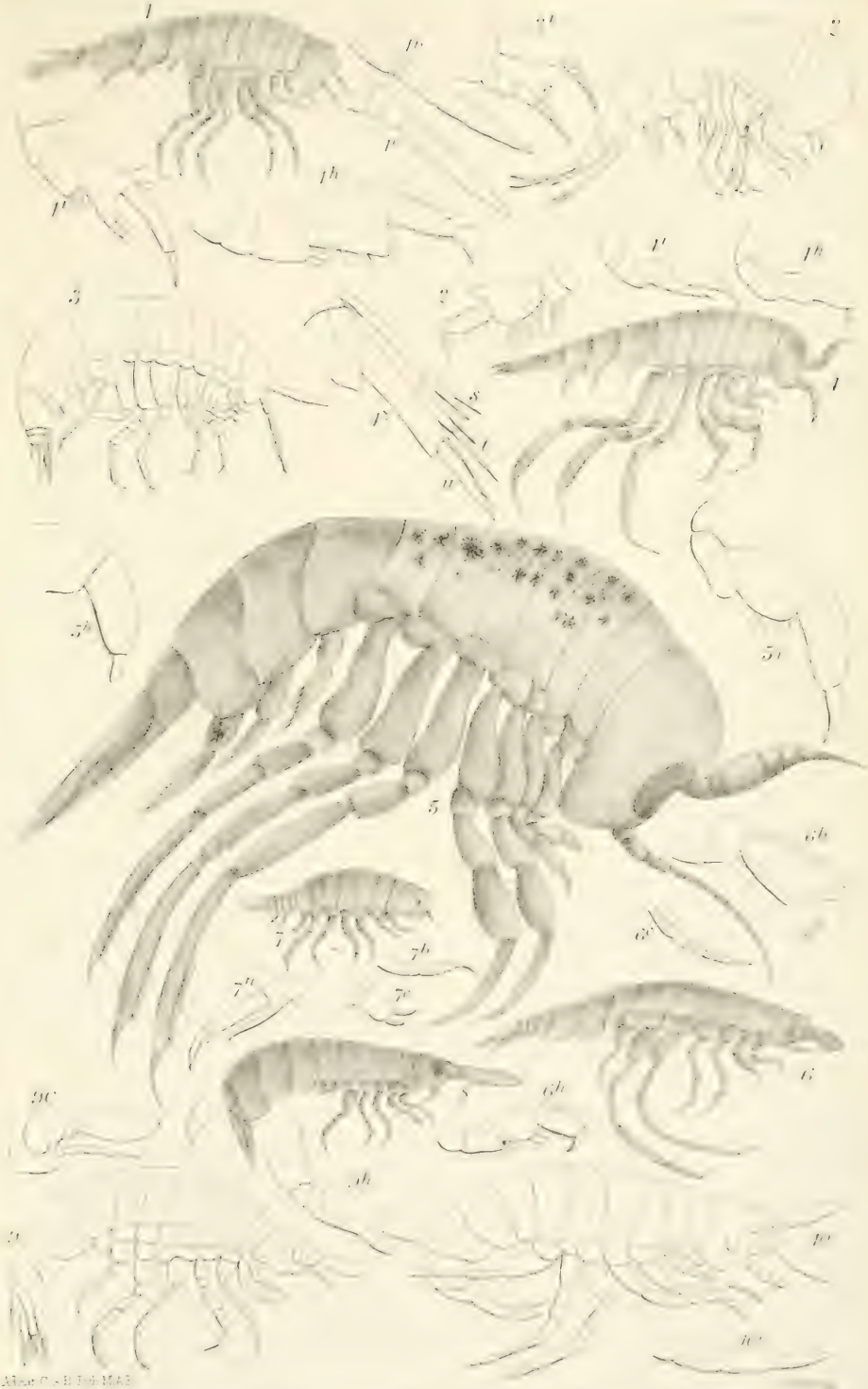
Adnat C S B. Ithu M. J B W West imp

1. Dricpe irrorata. 2. D. crenatipalma. 3 Unciola leucopis. 4 Corophium longicorne 5 C spinicorne. 6. C. crassicorne. 7. C. quadricops 8 Clydonia gracilis. 9. C. longipes. 10 Icilhus ellipticus.



Adam & C.B. Tab.M.N. W.West imp.

1.Cheluraterebranus. 2.Lestrigonus exulans. 3.L.Gaudichaudii. 4.L.Imahani.
5.L.rubescens. 6.L.Fabrei. 7.L.ferus. 8.L.fuscus. 9.Hyperia galba. 10.Hcyamese.



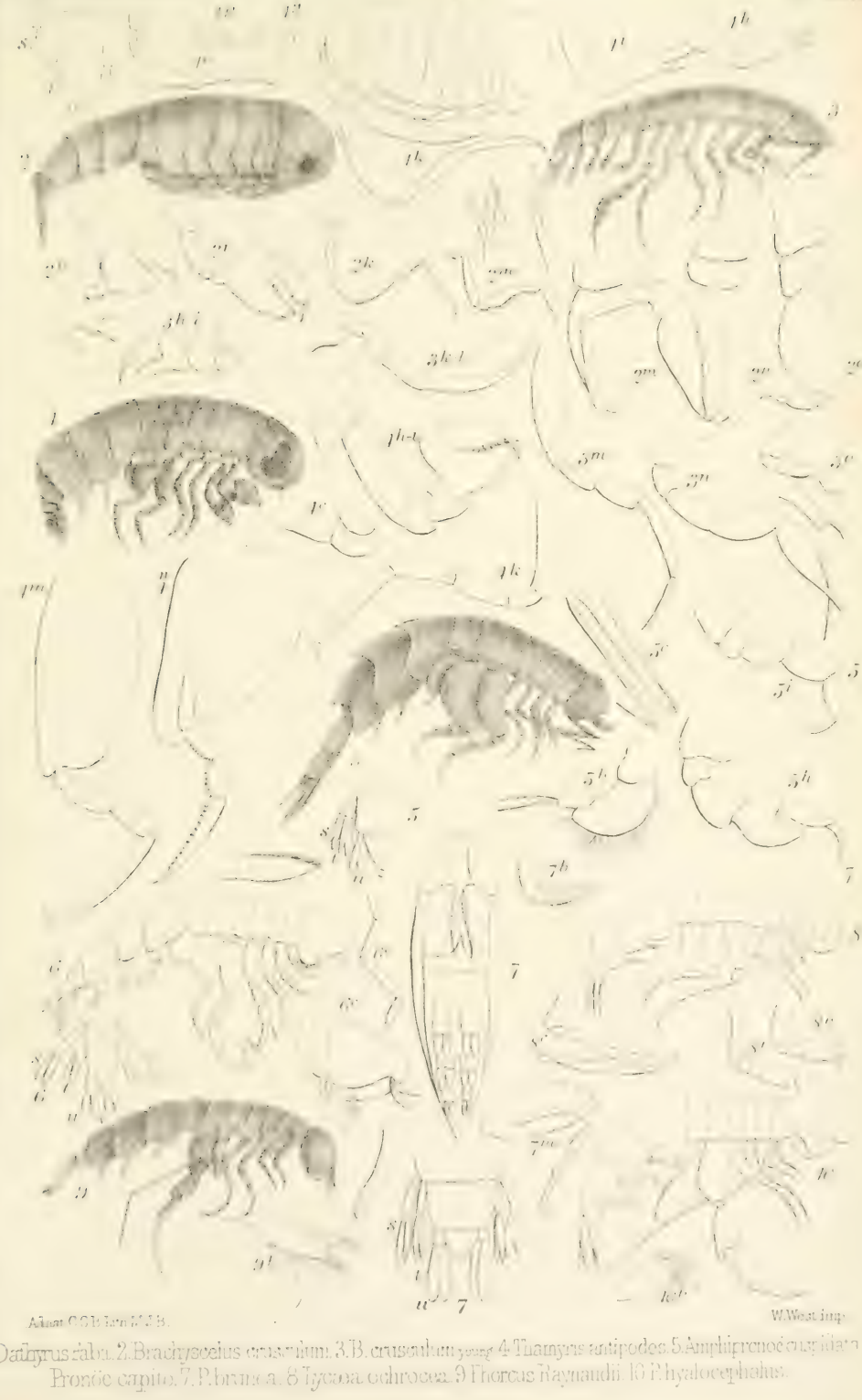
1. Hyperia medusarum. 2. H. macrocephala. 3. H. galba. 4. H. oblivia. 5. H. latissima.
6. Vibilia Edwardsii. 7. V. Edwardsii (young). 8. V. antipa. 9. V. longipes. 10. V. armata.

1. Cyllopus magellanicus 2. Cuma sp. 3. Cuma sp. 4. Diastylis laticauda 5. D. depressa 6. Diastylis sp.
7. Cystosoma neptuni 8. Themisto antarctica 9. T. Guérinii 10. T. Gaudichaudii 11. T. arctica 12. T. crassicornis

Adam & C. Black M.J.B.

1. Phronima sedentaria. 2. P. custos 3 P. Borneensis 4 P. Atlantica. 5 Phrosina semilunata.

Anchiomera Blossevillei. 2. A. Hunteri. 3. A. abreviata 4. A. sedentaria 5. Aparpurea 6. A. hexapoda.
7. Thyropus ovoides. 8. T. forus. 9. Platyscelus Faxoina. 10. P. serratus. 11. P. serratus young.

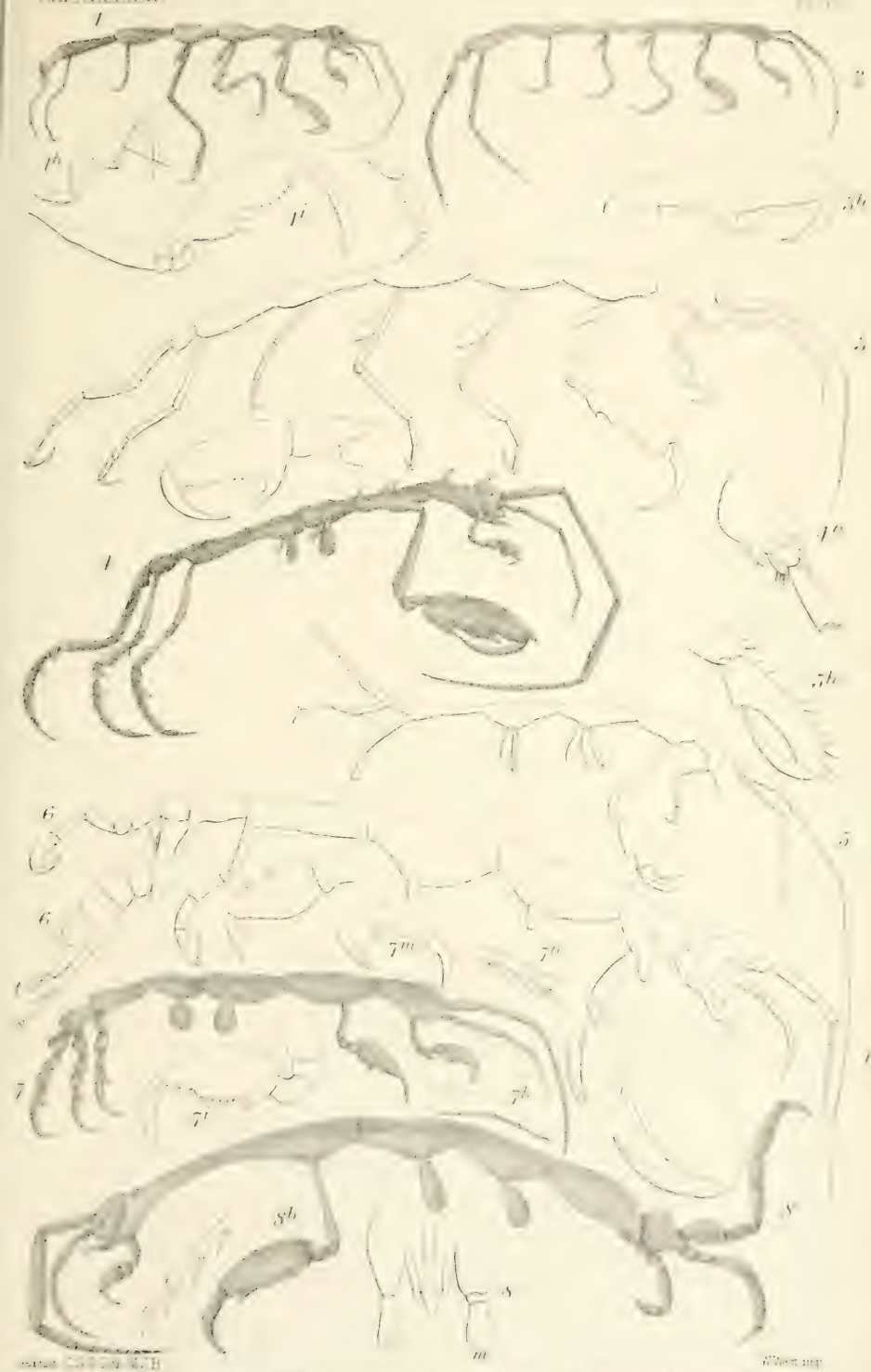


Adam & G.B. Sowerby lith.

W. West imp.

1. Dactylurus rabo. 2. Brachyscelus crassipes. 3. B. crassipes young. 4. Thamyris antipodes. 5. Amphiprenoe cuspidata. Pronoe capito. 7. P. brunnea. 8. Tyroea ochrocea. 9. Thoreus Raynaudii. 10. Phyalocephalus.

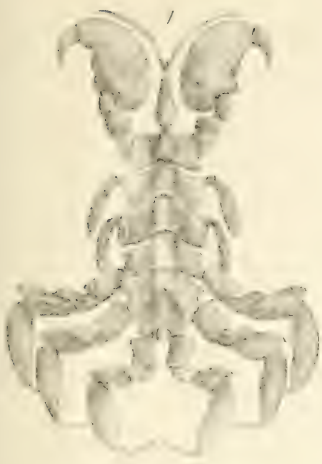
1 Squilla desmarestii. 2 S. neglecta var. 3 Pseudosquilla ciliata var. 4 (1) ovalis var. 5 (1) oculata var.
6 Rhinosquilla latissima. 7 R. carinicauda. 8 Gonodactylus chiragra. 9 Lysiosquilla maculata. 10 L. glabra.

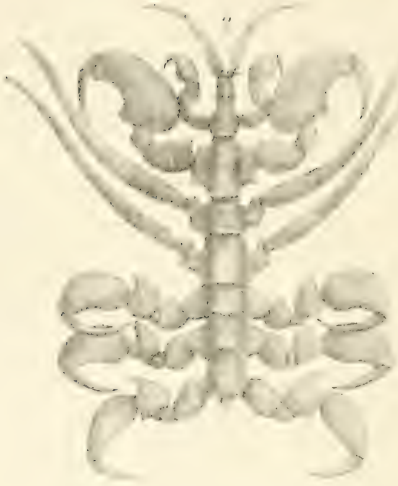


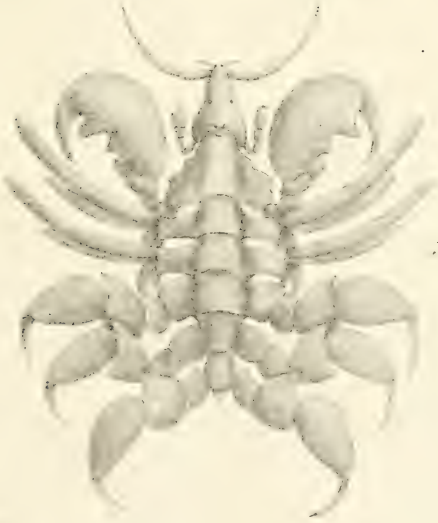
1 Protella phasma 2 Podalirius 3 Podalirius inermis 4 Podalirius typicus 5 Pseudaeginella
7 Caprella linearis 8 C. lobata

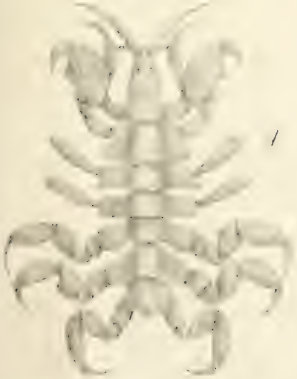
1.Caprella tuberculata. 2.Cyamus. 3.Cyamus ceti. 4.Proto. 5.Leptomera. 6.Podalirius.
7.C.nodosa. 8.C.geometrica. 9.C.dilatata. 10.C.robusta. 11.C.acanthifera.

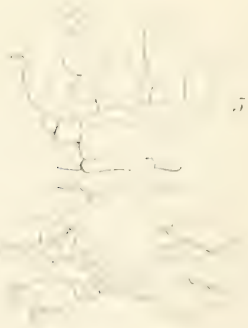
1.Caprella calva. 2.C.acanthifera. 3.C.spinosissima. 4.C.longicollis
5.Cœquilibra. 6.C.tenella. 7.C.attenuata. 8.C.aculeata. 9.Cultrina.











1. Cyamus gracilis. 2. C. ceti. 3. C. ovalis 4. C. abbreviatus. 5. C. Thompsoni

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British Museum (Natural History)
Dept. of Zoology
Catalogue of the specimens
of amphipodous Crustacea

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